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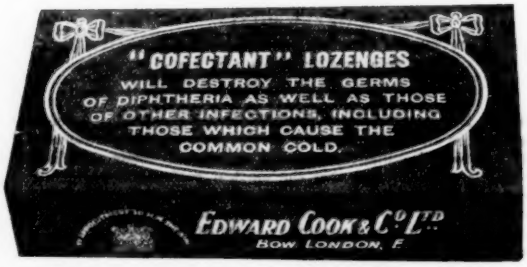
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An Inquiry

INTO

THE CARDIAC DISABILITIES OF SOLDIERS ON ACTIVE SERVICE.

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THIS paper records the result of an inquiry into the various conditions which lead men on active service to report sick with symptoms suggesting heart disease. It is based on 90 cases seen as they passed through a casualty clearing station with the British Expeditionary Force in France. From March, 1915, to January, 1916, every patient sent to my wards from a field ambulance with the diagnosis of heart disease or disorder was investigated. There was no selection, no patient so referred was rejected as unsuitable; thus the series is consecutive. During a large part of this period the clearing station was in reserve, hence the number seen gives no indication of the frequency of these disabilities or of their proportion to the total sick. Disadvantages in this inquiry were the short period of observation, usually two or three days, and the absence of special means of investigation. It was, however, an advantage to see the men so shortly after they had reported sick.

METHOD OF INVESTIGATION.

A detailed history of the patient was first obtained. Notes on infections, recent and remote, were followed by an account of his capacity for exertion at school and at work. After enlistment the effects of training and of campaigning were noted, then the immediate reasons for his reporting sick. It was found that about an hour was necessary to obtain a satisfactory history largely in the man's own words and without the use of leading questions.

On examination attention was directed to the patient's general condition and temperament. The position of the apex beat, with the patient recumbent, was used as a guide to the size of the heart. A standard amount of exertion served as a test for the functional efficiency of the heart.

A. NON-CARDIAC CONDITIONS (*22 Cases*).

When the difficulties of field ambulance work are considered, it is not surprising to find that in a number of patients the symptoms were due to other than heart disease. There were 22 among the 90 cases in whom other diseases were demonstrable. Of these 2 had acute and 3 chronic nephritis, 1 acute and 1 chronic bronchitis. One patient had an enlarged thyroid gland with tachycardia; another had a goitre without symptoms of thyroidism, though he complained of a choking feeling on the march. Three cases were sent as "D.A.H." (disordered action of the heart) because of syncope alone and 3 others because they showed an unusual degree of normal sinus arrhythmia. The 7 remaining cases were considered, respectively, examples of pulmonary tuberculosis, arteriosclerosis, chronic alcoholism, immaturity, debility, epistaxis, and lymphatic leukæmia.

B. VALVULAR DISEASE (*28 Cases*).

Among the 90 cases valvular disease was present in 28. Of these, 8 had mitral incompetence, 4 mitral stenosis, 8 aortic incompetence, 1 aortic stenosis, and 2 acquired pulmonary stenosis (rheumatic history, thrill at pulmonary area). One patient had aortic and mitral incompetence and in two patients mitral stenosis was doubtful. For convenience a case of thoracic aneurysm and one of dextrocardia are included in this series of 28. In 16 cases there was a history of acute rheumatism. In 18 the chief symptom was shortness of breath, in 8 it was pain; all cases with pain had also shortness of breath. Palpitation was an additional symptom in half the cases. Eight patients, of whom 6 had aortic incompetence, complained of giddiness or faint feelings. Syncope had occurred in one case of aortic incompetence and in one of pulmonary stenosis. Two men complained of great exhaustion on the march and two of weakness of the legs on exertion. The symptoms were provoked by doubling and marching, and in 25 cases they had been present before enlistment. One man of 40 with a to-and-fro ("bellows") murmur at the aortic area, yet without displacement of the apex beat, had served 16 months, including six at trench work in France. He had no symptoms whatever and the aortic incompetence was discovered at a chance examination.

C. SO-CALLED SOLDIER'S HEART (*40 Cases*).

(1) Etiology; (2) Symptoms; (3) Physical signs; (4) Exertion test; (5) After-history; (6) Nature of the condition; and (7) Conclusions.

After dismissing briefly the cases with non-cardiac conditions and those with valvular disease, there remain 40 patients to be considered more closely. They were men who complained of cardiac symptoms, especially breathlessness and præcordial pain, but in whom no physical sign of heart disease could be found. In the Army Medical Service they would be classified under D.A.H., and in medical literature they have been referred to as "soldier's heart." The terms "irritable heart" and "heart strain" have been employed, but their use is open to criticism. These 40 cases are summarised at the end of this paper; the full notes on them are the foundation for the following statements on the etiology, symptoms, and signs of this group of patients and for the subsequent discussion on the nature of the condition.

Etiology.

Age.—The average age of these patients was 30 years. Of men between the years 17 and 20 there were 6; between 21 and 30, 17; between 31 and 40, 9; and between 41 and 50, 8. One patient, aged 51, was the only man above 45 years of age.

1. *Infections.*—(*a*) Before enlistment. Four patients gave a history of acute rheumatism, and 3 of them had symptoms before enlistment (Cases 11, 18, and 19). Two men (Cases 13 and 18) had contracted enteric fever during the South African War, 2 gave a history of pneumonia, and 2 of pyrexia of unknown origin (Cases 3 and 24). The following infections had occurred, each in one case: syphilis, dysentery, repeated colds (Cases 21, 4, and 6). Thus in 12 out of 40 cases there was a history of an infection which may have been the cause, and 8 of these had symptoms before the war. In addition 7 patients said they had scarlet fever in childhood, though none diphtheria. (*b*) After enlistment. In 5 patients, previously healthy, cardiac symptoms followed immediately upon an illness during military service. In 2 of them (Cases 9 and 10) "influenza" preceded an attack of angina pectoris; in the remaining 3 symptoms appeared after trench feet and lumbago (Case 25), lumbago (Case 33), and pains in back and joints (Case 28).

2. *Tobacco.*—Two men admitted that they were heavy smokers. Sixteen smoked cigarettes and claimed to be moderate (5–10 a day). Ten smoked a pipe (1–3 oz. weekly), rarely cigarettes. Four smoked little, not more than one or two cigarettes a day, and 1 was a non-smoker (Case 20). In 7 there is no note as to smoking. It is noteworthy that about half the cases either smoked a pipe or were very light smokers.

3. *Alcohol.*—Ten patients were total abstainers; three had been rather heavy beer drinkers before they left England, but, as usual, had taken less in France. The remainder may be considered moderate drinkers.

4. *Muscular strain.*—Among 40 cases only 4 gave a history ascribing the onset of symptoms to a particular exertion. Case 3 first noticed præcordial pain after marching several miles with a full pack on a hot day; it recurred on subsequent moderate exertion. Eighteen months before, he had been confined to bed for five weeks with "influenza." Cases 9 and 10 suffered from an attack of angina pectoris during exertion, but each had just returned to duty after "influenza." Case 20 experienced no symptoms until subjected to unusually severe trench work, and then slight breathlessness and pain preceded by three weeks the sudden onset of severe pain while carrying a heavy weight.

5. *Hyperthyroidism.*—In two only among the whole 90 patients was there evidence of enlargement of the thyroid gland; they are included above in the non-cardiac series. Not a single patient considered as "soldier's heart" showed any enlargement of the gland or any other signs or symptoms which, combined, would justify a diagnosis of hyperthyroidism.

Symptoms.

An unexpected result of inquiries into the medical history of patients before enlistment was the frequency with which similar symptoms had been present for years before the war. This was true of no less than 29 of the 40 cases. In support of their assertion is the fact that 24 of these had symptoms as soon as they began to train; the remaining 5 had little or no training. Seven had been compelled to obtain lighter civil employment because of their disability. If we except 9 men whose symptoms had only been slight before enlistment ("always short-winded"), there remain 20 out of 40, exactly half the cases, who had had on exertion definite shortness of breath, palpitation, or pain before they joined the Army.

That the symptoms arose from the heart can scarcely be questioned. The dependence of the breathlessness and pain upon exertion and the frequency of præcordial pain are characteristic. The symptoms are identical with those shown in valvular disease.

In all cases shortness of breath was induced by exertion and was absent during rest, except in Cases 11 and 21. Under training doubling was almost invariably mentioned as the source of greatest difficulty; indeed, many were excused doubling on this account. Marching produced shortness of breath or præcordial pain. Several complained of symptoms when marching to and from the trenches, but said they felt well enough while in them. Among mounted men, riding at a moderate pace was tolerated, but trotting invariably induced their symptoms. In 4 cases the excitement of shell-fire provoked palpitation or giddiness (Case 25), præcordial pain (Case 35), and palpitation (Cases 33 and 36).

(*a*) *Shortness of breath.*—This was present on exertion in every case except one (Case 3).

(*b*) *Pain.*—Pain had occurred in 24 cases—i.e., more than half; in 6 it was severe, in 14 moderate, and in 4 it was slight. With one exception (Case 3), all patients with pain had also some breathlessness on exertion. Needless to say, the patient's own diagnosis of pain over the heart was not accepted without criticism. He was asked to point to the site, and this is indicated in the summarised histories. The pain was usually of an aching character; with more severe exertion it became sharp. It was limited to the region of the apex beat in 8 cases, to the fourth left space (anteriorly) in 3, and to the fifth space in 2. In 4 patients the pain occurred in a larger area, including the third, fourth, and fifth spaces. Three men described severe pain with extension down the left arm, which might permit its description as *angina pectoris* (Cases 9, 10, and 11). Of a different character was the pain in Cases 28, 29, and 38, who felt a gripping sensation across the lower half of the front of the chest as the result of effort. Cases 26 and 28 complained of a "weak feeling" in the left breast and left arm respectively, and Case 7 of cramp in the left arm. In two patients the pain was felt at the left costal margin and may not have been cardiac.

(*c*) *Palpitation.*—This was one of the complaints in 26 of the 40 cases, and a prominent one in 9 cases. (Cases 32–40.) Nine felt it during exertion, 9 others particularly on excitement but also on exertion. In 2 of the 5 patients whose description suggested irregularity of the heart, premature contractions were noted clinically.

(*d*) *Giddiness.*—This was present in half the patients and a prominent symptom in Cases 1 and 14. It usually accompanied the other symptoms on exertion.

(*e*) *Exhaustion.*—This is a complaint difficult to assess in a medical history. Sixteen patients said that they were easily exhausted—e.g., on the march; weakness of the legs was specially mentioned by 3, as one of the symptoms which made them fall out on the march.

(*f*) *Other symptoms.*—Sweating was mentioned by 6 men as one of their complaints. "Faint feelings" were a source of trouble to several men, and actual syncope had occurred since enlistment in 3 (Cases 15, 23, and 35). Repeated headaches had troubled 3 patients.

Nervous symptoms.—It will be remarked, in glancing through the summaries, that 9 cases (Cases 32–40) differ to some extent from the rest. Palpitation was a prominent symptom with them and had been present in 7 cases for years; it is noteworthy that they also had breathlessness or pain on exertion. Of these 9 patients, 5 (Cases 32, 35, 36, 37, and 39) were of a nervous temperament, flushed readily, and were easily excited; both in appearance and manner the remaining 4 were normal. The first two of the nervous patients said, "My nerves are gone" and "I cannot stand it." The "attacks" in Cases 32, 33, and 37 were similar; they were induced by excitement as well as by exertion, palpitation was accompanied by "fullness in the throat," tingling of fingers or coldness of feet, and sweating. The attack lasted from half an hour to an hour, during which time the patient felt quite exhausted, "dead beat."

Physical Signs.

As cases with valvular disease of the heart and diseases other than cardiac have been separately considered above, it is to be expected that abnormal physical signs will here be few. The physique and general appearance of these patients did not differ greatly from that of other medical cases admitted to the clearing station. A few of nervous temperament are cited above when describing symptoms.

The rate of the pulse.—The average pulse-rate among these 40 patients, while lying down, was 75 per minute. It was below 70 in 12, between 71 and 80 in 13, and between 81 and 90 in 11 cases. In 3 patients only was the rate higher than 90. In Case 25 it was found to be 92–104 on five successive days; in Case 22 it was 90–96 on three successive days; in Case 13, 94–110 on three days of observation. It will be seen that, while it is higher than that of normal men, the average rate among patients with "soldier's heart" is not high; so that tachycardia is not a feature of the group as a whole. For the effects of posture and exertion on the pulse-rate see the section on exertion tests.

The size of the heart.—In the absence of opportunities for orthodiagraphy and recognising the unreliability of percussion in slight changes in size, it was decided to use the position of the apex beat as the guide, with the patient recumbent. Among my 40 patients this was felt in the fifth (occasionally fourth) space, internal to the nipple line in 23 cases; in the nipple line in 6 cases; and just external to that line in 2 cases only (Cases 12 and 19). In no case was the impulse felt in the sixth intercostal space. In 9 men the apex beat was not palpable, but to percussion the heart was not enlarged. Hence evidence in favour of enlargement of the heart was only present in two cases (Cases 12 and 19), unless palpation of the apex beat *in* the nipple line is so regarded. In the 6 cases where this was its position not even a faint murmur was heard.

Auscultatory signs.—There was no alteration in the heart sounds and no murmur in 26 cases out of 40. In Cases 2 and 11 the heart sounds were distant, and in Cases 1, 16, and 19 (*q v.*) they were modified. A short soft systolic murmur was heard at the apex in 9 cases only, and in them the pulmonary second sound was not accentuated. In 5 of these where the test is noted the murmur was absent on standing.

In Cases 2, 26, and 37 the radial arteries were thickened more than usual at their ages—43, 51, and 38 years respectively; but their urine contained no albumin, and there seemed little in favour of considering their symptoms to be due to arteriosclerosis. The urine was examined in 21 cases, not in the earlier patients seen, and was free from albumin. Premature contractions were noticed in 3 patients, and in Case 32 they occurred after every normal beat (pulsus bigeminus).

Exertion Test.

In all but three cases the following exertion test was applied. After the patient had been lying on his stretcher for half an hour the pulse-rate was taken by palpation, counting one-half minute. He was then told to stand, and the pulse-rate was immediately counted during the next half minute. Then he was accompanied while climbing 20 steps at a moderate pace, and his pulse was again taken in the same way. The symptoms provoked were inquired for and controlled by observation. The object was twofold: first, to determine the functional efficiency of the heart by noting the symptoms produced in different patients by the same amount of exertion; and, secondly, to decide whether the increase in pulse-rate bore any relation to the severity of the symptoms produced.

1. *The symptoms induced by a standard amount of exertion as a test of myocardial efficiency.*—In the absence of physical signs of heart disease, symptoms assume an especial importance, and a clinical test which reproduces them becomes most necessary. Five patients (Cases 10, 11, 22, 23, and 27) showed rather severe shortness of breath; they were panting

after climbing 20 steps or, in Cases 10 and 11, after walking 30 yards slowly. Yet examination revealed no physical signs of heart disease, and their pulse-rate did not increase on the test exertion more than that of patients *without* breathlessness after the test (see table). We are led to conclude, however, from the medical history and from the severe symptoms induced by an easy exertion test, that they were suffering from considerable cardiac insufficiency. Of the remaining patients, about half showed a slight or moderate degree of breathlessness after the exertion test and the other half showed none. Regarding cardiac efficiency, the test gave evidence which was valuable both in controlling the patient's assertions and in deciding the grade of disability.

2. *The increase in pulse-rate after a standard amount of exertion.*—This proved to be valueless as a means of estimating cardiac efficiency. Reference to the appended table shows that, although the increase is greater in these patients than in normal men, this increase bears no relation to the production of symptoms. The patients without breathlessness after the test, those suffering slight breathlessness, and those suffering severe breathlessness, all showed an increase in pulse-rate of much the same degree.

Table showing the Incidence of Breathlessness and Increase in Pulse-rate after Exertion Test. (Cases of "soldier's heart" and controls.)

—	Shortness of breath.	Average pulse-rate—			Average increase in rate—	
		Lying.	Standing.	After exertion.	Standing.	After exertion.
			(first ½ min.)			
90 healthy soldiers	*None.*	*72*	*80*	*93*	*8*	*21*
10 patients ("soldier's heart") ...	None.	72	100	118	28	46
10 ,, ,, ...	Slight.	78	106	127	28	49
10 ,, ,, ...	Moderately severe.	80	107	127	27	47

After-history.

The prognosis in this group of patients can only be decided when a large number of them have been followed over a long period of time. Some information on the early after-history of the cases recorded in this paper is now available. At the end of May, 1916, a personal letter of inquiry was sent to the home address of each man, with a request that it should be forwarded to him. When this failed to elicit a reply, inquiries were made at his depôt or battalion. In 39 out of the 40 cases replies were received and a short note on the early after-history of each man will be found at the end of each summary. It is rather disappointing to learn how few are back on full duty and free from symptoms. The present condition of the 40 patients after an average period of 7 months (minimum 4 months, maximum 14) from the date of reporting sick is as follows :—

Full duty; no complaints	4 (Cases 19, 28, 34, 39).
,, ,, slight symptoms ...	2 (Cases 3, 5).
,, ,, no better	3 (Cases 6, 24, 31).
Light duty; no complaints... ...	1 (Case 36).
,, ,, slight symptoms ...	5 (Cases 1, 10, 30, 32, 35).
,, ,, no better	11 (Cases 2, 8, 12, 14, 16, 18, 21, 22, 26, 27, 37).
Still in hospital; improving ...	4 (Cases 7, 20, 23, 40).
,, ,, ,, no better ...	3 (Cases 15, 25, 38).
Discharged permanently unfit, and no better	4 (Cases 9, 13, 29, 33).
One killed, one deserted from home service	2 (Cases 4, 17).
Not traced	1 (Case 11).
Total	40

A few of the patients complained in their letters that they were being retained on duty although they felt quite unfit for it. This may or may not be true, for the absence of abnormal physical signs makes it easier for a shirker to exaggerate his symptoms. But it seems that considerable symptoms are often disregarded by medical officers when they fail to find the physical signs upon which they have been taught to rely. On the other hand, it has been asserted by medical officers at training camps that they find it extremely difficult to obtain consent to the discharge of recruits who, though incapable of sustaining the drill and marching, present no conclusive physical signs of heart disease. It would surely be a considerable saving if such men, potential invalids and unfit to be soldiers, could be discharged from the Army while still recruits. If this were done the number of these cases going sick while on active service could be considerably reduced. If, as is suggested, the symptoms in many cases are merely unmasked by military duties and the disability was present before enlistment, such men will return to their civil employment without any permanent disadvantage from their military service.

Treatment directed to overcome a persistent cardiac defect is unlikely to be successful in returning men to full duty as soldiers, but in patients whose disability has arisen during active service better results may be obtained from treatment, and much attention is now being given in the Army Medical Service with this end in view. The importance of sufficient rest and abstention from full duty in patients convalescent from acute infections is emphasised by several of the histories.

The Nature of So-called "Soldier's Heart."

The war has revealed the presence among soldiers of a large number of men who present symptoms, especially breathlessness and præcordial pain, suggesting heart disease, but in whom no signs of disease are found on physical examination. Attention has been directed to them in previous wars and to a less extent during peace. Their importance from a military standpoint is obvious; for these men, although passed by the recruiting medical officer as fit, prove unable to carry out their duties as soldiers. In addition to its national significance, the existence among the civil population (from which soldiers are drawn) of so many men whose hearts prove inadequate for the exertion inseparable from military service provides a problem of considerable medical importance.

Certain views have been advanced respecting the nature of this group of patients. It has been ascribed to hyperthyroidism. Enlargement of the thyroid gland, tachycardia, and nervous disturbances are the leading features of this disease in the absence of exophthalmos. The only two among our 90 cases in whom the thyroid gland was enlarged are noted in the non-cardiac series; no enlargement was detected in any of the 40 patients now being considered. Tachycardia was notably infrequent among them, as will be seen on reference to the rates given in the section on physical signs. The rapid heart of hyperthyroidism tends to be rapid when the patient is at rest; the average pulse-rate of these patients at rest was 75 per minute. Nervous disturbances were present in several cases, as might be expected, but not of a character or degree to suggest hyperthyroidism as their exciting cause. Excessive smoking, especially of cigarettes, has been blamed as the source of the disability, yet half these patients were either pipe-smokers or smoked very little. Smoking is undoubtedly an accessory cause in certain patients. In the past many cases of cardiac disability have been regarded as the immediate result of some special muscular effort. Of recent years, however, there is a growing conviction that it is rare for physical strain alone to injure a heart which was previously healthy. In most cases of so-called "heart strain," where symptoms seem to date from some unusual effort, careful examination reveals the presence of old disease or of a new and abnormal rhythm, or the history includes a recent infection. Among 40 patients only four attributed the onset of symptoms to a particular exertion; these histories are examined above under etiology. Although functional nervous disease may be present in a few of the patients, it cannot be held to explain the larger number; and malingering could only give rise to error in an occasional case.

The 40 patients who remained after excluding those with valvular and non-cardiac disease suffered from cardiac disease or disorder difficult to place in any medical category. No doubt exception will be taken to the inclusion of some patients in this series. It may be said that we are confronted with a mixed group of cardiac diseases and disorders; and this is the writer's opinion.

The fact that more than half the patients had shown the same symptoms in civil life suffices to prove that the disability is not one peculiar to soldiers; rather is it one unmasked by war conditions or revived by the exigencies of

a soldier's life. In civil employment a man can "take his own time," and the work is that to which he has been accustomed for years. Where the disability did first show itself during military service the apparent causes were various. In some it clearly resulted from an infection. In a few men the strain of campaigning was disclosed by cardiac as well as by nervous symptoms. The mental and nervous element in those undergoing the strain of war cannot be overlooked. The sensations which arise from a disordered heart must be received by the central nervous system and realised in the consciousness of the individual. A slight disorder of the heart appreciated by a too sensitive nervous system may lead to complaints, genuine enough, but of greater intensity than a man with a normal nervous system would feel.

In most cases, where the cause of cardiac impairment is obscure, the heart proved capable of bearing an average amount of strain, but that demanded by military necessity became excessive for the individual and symptoms began to appear. It was not "heart strain" from a particular exertion, but an inability of the heart to cope with the arduous work involved in, say, a prolonged march with a full pack. The question arises whether the heart muscle is healthy in these men. Progress in the realm of heart disease has been so great in recent years that it may be salutary for us to encounter this group of patients, isolated by the conditions of war, for whom our physical methods of investigation are found inadequate. Before the war Sir James Mackenzie was urging that more attention should be directed to the study of the efficiency of the heart muscle; and now, confronted with patients like these, more knowledge on this subject is imperative. If a soldier is unable to carry out the task his fellows perform because he becomes breathless and experiences præcordial pain, we cannot be content to say that no physical signs of heart disease are present; the fact remains that the heart is inefficient. If the methods habitually used for the elucidation of cardiac disease are insufficient, other methods must be utilised and other tests devised.

Until the physical signs of myocardial disease or impairment are more satisfactory, attention must be directed to symptoms, their mode of production, interpretation, and significance. All our patients were separated by a test of myocardial efficiency—the physical exertion incidental to active service. This test can be imitated clinically to some extent by noting the symptoms produced in different patients by a standard amount of exertion. When this test was applied to cases in our series all grades of disability were found. Some were actually panting when they had climbed but 20 steps, and that slowly. If the history shows that a disability of so serious a degree is permanent the diagnosis of myocardial disease is surely permissible. But it was not found possible to separate these cases with myocardial disease from the rest. There was every gradation from the men incapable of climbing the steps without panting to those in whom the test failed to produce any symptom; just as in the history there was every grade of disability from the man unable to march a hundred yards to the man only a little below the average in his marching capacity. Hence it is difficult to decide when the diagnosis of myocardial disease is warranted. It may be that myocardial disease of different grades accounts for a large number of the patients under consideration. In the milder cases we may assume the presence of some functional and perhaps temporary disorder of the heart. But in cases where the disability has been present for years, showing itself slightly at civil work and more on military training and campaigning—whenever, indeed, the exertion test was sufficiently applied—it becomes reasonably certain that there exists some pathological change in the heart muscle. The after-history of failure to improve with rest and treatment, given by so many of these patients, supports this hypothesis.

Conclusions.

1. Among soldiers in training and on active service are found a number who report sick for cardiac symptoms on exertion, but show none of the physical signs indicative of heart disease.

2. These men are the subjects of a cardiac disability which is unmasked by the exertion required of a soldier. It is not a specific variety of heart disease and needs no such name as "soldier's heart." In about half the cases in this series the disability had been present to some extent in civil life and was therefore not the result of military service.

3. The relative cardiac inefficiency may be: (*a*) A sequel of acute rheumatism, dysentery, "influenza," or other infection. (*b*) The result of myocardial changes due to age, especially in soldiers over 40. (*c*) Associated with functional nervous disorder, particularly where palpitation is a prominent complaint. (*d*) Due to endowment with a heart of limited efficiency, so that the individual has "always been short-winded" and fails to improve under training. The cause may be a congenital incapacity for full development of the heart, an unrecognised infection during infancy, or the absence of physical training during adolescence.

4. A simple exertion test, such as climbing 25 to 50 steps, reproduces the symptoms in these patients and so furnishes valuable information on the functional efficiency of the heart. The rate of the heart at rest is little higher than that of normal men, though the increase on exertion is greater. Nevertheless, the increase of rate on exertion bears no relation to the symptoms elicited, and is therefore valueless in judging the functional efficiency of the heart.

5. Some degree of myocardial disease is present in a number of cases; witness the history of infection, especially acute rheumatism, the long history and persistence of the disability, and the reaction to simple exertion tests.

6. The absence of abnormal physical signs in the heart of a soldier should not prevent his discharge from the army if, under training or on active service, he shows breathlessness and præcordial pain whenever he undergoes exertion well borne by his fellows.

CASES OF SO-CALLED SOLDIER'S HEART.

CASE 1.—Corporal —— (Regimental No. 12531), aged 21. History: Miner; quite well before enlistment in August, 1914. March, 1915, to France. About June began shortness of breath and palpitation on exertion. Later, præcordial pain (fifth space between nipple and middle line) and giddiness, even on walking. August, admitted to Casualty Clearing Station (C.C.S.). Examination: Apex beat, fifth intercostal space, internal to left nipple line. First sound duplicated at all areas; second sound duplicated, but not loud, at base. No murmurs. Nine months later: Light duty, slight symptoms.

CASE 2.—Private —— (10176), aged 43. History: Age 22 to 32 in Army, quite well. Age 34 to 42, stone worker. Occasional pain at left costal margin on exertion; doubtful whether short of breath. August, 1914, re-enlisted. October, to France. December, to England with shortness of breath, swelling of feet, and pain as described. June, 1915, again to France. Unable to march because of dyspnœa, palpitation, and pain. September, admitted. Examination: Apex beat not felt. Heart sounds distant. No murmurs. Radial arteries moderately thickened. Nine months later: Light duty, no better.

CASE 3.—Lance-Corporal —— (13633), aged 28. History: Heavy work as smith; no illnesses except "influenza and bronchitis" in January, 1914. September, enlisted. July, 1915, to France. In August, during a march, felt sudden sharp pain near apex beat, accompanied by nausea, dizziness, sweating, and palpitation, and followed by aching in left breast. A month later similar attack while bomb throwing. No complaint about breath. September, admitted. Examination: Apex beat, fifth space, internal to nipple line. At apex, short soft systolic murmur, disappearing on standing. Pulmonary second sound not accentuated. Nine months later: Full duty in France, slight pain.

CASE 4.—Corporal —— (8344), aged 39. History: Age 21 to 28, in Army; served in South African War. Age 26, dysentery in Egypt. Age 28 to 38, machineman; quite well. August, 1914, re-enlisted. April, 1915, to France. July, began dull pain at apex beat, especially on marching, also shortness of breath and exhaustion. September, admitted. Examination: Apex beat, fifth space, in the nipple line. Heart sounds normal; no murmurs. Six months later: Killed on active service.

CASE 5.—Gunner —— (27417), aged 28. History: Age 19 (1907), enlisted; later in Reserve; quite well. August, 1914, to France with Royal Garrison Artillery. Since March, 1915, slight shortness of breath on exertion, also palpitation and stabbing pain at left costal margin. Two weeks before admission, mild attack of bronchitis, but some shortness of breath and palpitation persisted. September, admitted. Examination: Apex beat not felt. Heart sounds normal. Short faint systolic murmur at apex, not conducted out. No signs of bronchitis. Nine months later: Full duty in France, slight palpitation only.

CASE 6.—Private —— (14689), aged 22. History: Always subject to colds; no other infections. Since age of 17 palpitation and shortness of breath on exertion. Light bench-work. September, 1914, enlisted; same symptoms on doubling

or hurrying. September, 1915, to France. Palpitation, shortness of breath, exhaustion, and dull pain in fourth to sixth left spaces about nipple line, all on marching. After one month admitted. Examination: No abnormal physical signs. Eight months later: Full duty in France, but no better.

CASE 7.—Private —— (4228), aged 28. History: At school and at light work as packer, easily out of breath; "wind" never good. Palpitation, dizziness, and occasional præcordial pain on exertion. May, 1915, enlisted. Sharp pain in left breast and shortness of breath at drill. Slight dizziness. September, to France. Sharp pain from third to fifth space in nipple line and shortness of breath whenever marching with pack. Palpitation also at night. After one month admitted to C.C.S. (October). Examination: No abnormal signs. Eight months later: Hospital, improved, still pain.

CASE 8.—Private —— (1129), aged 30. History: Since at school and while a labourer, palpitation, præcordial pain and breathlessness on exertion. September, 1914, enlisted. November, to France; palpitation and exhaustion during trench work. Since August, 1915, breath very short on march, with sweating and palpitation. October, admitted. Examination: Apex beat, fifth space, internal to nipple line. Short soft systolic murmur at apex, disappearing on standing. Seven months later: Garrison duty, no better.

CASE 9.—Private —— (469), aged 28. History: Wheelwright; quite well. December, 1913, joined Reserve. August, 1914, to France. Quite well until two weeks before admission, when he was in bed four days with "influenza" (headache, pains in chest, loss of voice). On return to sentry work, præcordial pain on walking. While in bed, attacks of severe pain beginning in fourth left space and extending down inner side of left arm. The pain lasted about five minutes and recurred every hour; it left the arm weak and tingling. No shortness of breath during the attacks. A week later, February, 1915, admitted. Slight præcordial pain on admission. Examination: Apex beat, fifth space, in nipple line. Heart sounds normal, no murmurs. Fifteen months later: Still some pain. January, 1916, discharged permanently unfit.

CASE 10.—Private —— (997), aged 21. History: Farm labourer; quite well. August, 1914, mobilised from Reserve and sent to France. One month before admission, "influenza"; in bed three days with pyrexia, weakness, and cough. On returning to duty experienced attacks of sharp pain from apex beat to anterior fold of axilla and down left arm to elbow. These attacks were induced by exertion as lifting and lasted several minutes, stopping suddenly. He also found himself short of breath on moderate exertion. March, 1915, admitted. Examination: Apex beat, fifth space, internal to nipple line. Heart sounds normal. Fourteen months later: Light duty, almost well.

CASE 11.—Sergeant —— (84818), aged 36. History: Aged 17 to 29 in Army. In 1908 acute rheumatism; discharged from Army. Since aged 32 furnaceman; shortness of breath and palpitation on severe exertion. Syncope three times. August, 1914, re-enlisted. Attack of orthopnœa and œdema after exposure at a review. Improved and went to France in May, 1915. Præcordial pain and breathlessness on severe exertion. Five days before admission, while carrying telephone wire under fire, felt sudden pain at apex beat shooting down left arm, "I thought I was shot." Fell down very short of breath. Left arm remained sore and weak. Two days later similar attack but with unconsciousness; left arm useless. Two days later, August, admitted. Examination: Slight breathlessness, no pain. Apex beat not felt, area of cardiac dullness not enlarged. Heart sounds distant, no murmurs.

CASE 12.—Private —— (13661), aged 20. History: Age 12 to 16, newsboy, much running and exposure. Carpenter. Pain at apex beat and breathlessness on exertion during three years before enlistment. September, 1914, enlisted. Præcordial pain and shortness of breath on marching during training and since arrival in France. November, 1915, admitted to C.C.S. Examination: Apex beat, fifth space, just external to nipple line. Heart sounds normal; short faint systolic murmur at apex, absent on standing. Pulse 80. Seven months later: Garrison duty, no better.

CASE 13.—Private —— (5183), aged 35. History: Age 20, enteric fever in South African War. Age 25 to 34, boilermaker, heavy work, quite well. August, 1914, mobilised from Reserve. Fell out on march during training and in France with breathlessness, palpitation, and exhaustion. July, 1915, after six miles marching, while very short of breath, felt his heart stop, became giddy, and fell down gasping. August, admitted. Examination: Apex beat, fifth space, internal to nipple line. Heart sounds slightly distant, no murmurs. Five months later: No better, discharged permanently unfit.

CASE 14.—Driver —— (9229), aged 33. History: Labourer, but had to get light work because of shortness of breath on exertion. August, 1914, enlisted. During training and later in France riding produced breathlessness and palpitation. The breath became worse, "couldn't possibly run," and he became giddy even on mounting a horse. November, 1915, admitted. Examination: No abnormal signs. Six months later: Base duty, no better.

CASE 15.—Private —— (5132), aged 19. History: Machinist. Frequent faint feelings. Shortness of breath and palpitation on over-exertion. Could not cycle as far as his friends. September, 1914, enlisted. Fell out at drill and on the march with breathlessness. August, 1915, to France; same symptoms and also syncope. November, admitted. Examination: Apex beat not felt. Short faint systolic murmur at apex, absent on standing. Six months later: Still in hospital, no better.

CASE 16.—Gunner —— (62006), aged 36. History: Labourer. Age 30, obtained lighter work on account of shortness of breath, palpitation, and giddiness on exertion. Heavy beer drinker. September, 1914, enlisted. Breathless on doubling, discharged from Army. January, 1915, re-enlisted. June, to France. Unable to march because of breathlessness, præcordial pain at apex beat, palpitation, and exhaustion. Examination: Apex beat not felt. Short soft systolic murmur at apex. Second sound duplicated at all areas. Pulse 84, small volume; artery not thickened. Six months later: Base duty, no better.

CASE 17.—Private —— (12074), aged 30. History: Metal polisher. Good boxer in youth. Since age 24 palpitation on excitement and in bed. Games relinquished for this reason and for shortness of breath. August, 1914, enlisted. Work in stores. June, 1915, to France. Fell out on march or on handling sacks, because of breathlessness, palpitation, and faint feelings. November, admitted. Examination: Apex beat, fifth space, internal to nipple line. Short soft systolic murmur at apex. After six months: Home service, deserted April, 1916.

CASE 18.—Corporal —— (1339), aged 42. History: Age 19 to 31 in 17th Lancers. "Was your wind fairly good?" "No, my breath has never been what it should be." Age 27, enteric fever during South African War. Age 39 and 41, acute rheumatism. Age 31 to 41 in Reserve; light work; breath short on walking home, a mile. January, 1915, re-enlisted; to France as mounted police. Breath short when trotting. September, after trotting 500 yards, sudden severe pain in fourth left space, internal to nipple line; localised; lasted ten minutes; breath short; "I felt that my last day had come." Since this attack pain and breathlessness whenever he tries to trot. December, admitted. Examination: No abnormal physical signs. Five months later: Light duty, no better.

CASE 19.—Private —— (18581), aged 30. History: Shopman. Never played games; "I could never run without being puffed." Age 24, acute rheumatism. Breath became worse; occasional pain in sixth left space about nipple line. May, 1915, enlisted. Excused drill and marching because of breathlessness. September, to France. On marches to and from trenches shortness of breath, præcordial pain (sixth space, in nipple line), palpitation, and dizziness. December, admitted. Examination: Apex beat, fifth space, half inch external to nipple line. First sound resembles second at apex. No murmurs. Six months later: Full duty in France.

CASE 20.—Private —— (7559), aged 17. History: Age 12; acute rheumatism (?). Painter. Long-winded, good cyclist. June, 1915, enlisted. "Training did me good." Long route marches well borne. November (seven weeks before admission), to France. Exhausting trench work; no colds or other illnesses. Three weeks ago began to notice breathlessness, slight throbbing pain in left breast, and exhaustion, all on exertion. A week ago, while carrying a heavy waterpipe, felt a pain and strained feeling in the left breast, second to fifth spaces, with giddiness and shortness of breath. January, 1916, admitted. Examination: No abnormal physical signs. The aching in the second, third, and fourth spaces persisted during a week in bed. Five months later: Still in hospital, much better.

CASE 21.—Sergeant —— (9050), aged 42. History: Age 18 to 35 in Army; good runner. Age 28, syphilis. Age 35, left Army and became miner. Began to notice shortness of breath on heavy exertion. March, 1915, re-enlisted. May, to France; short of breath on a long march. From November, more breathlessness and some pain below left breast, fifth to seventh spaces, on marching. January, 1916, admitted. Examination: Slight shortness of breath in bed. Apex beat not felt. Heart sounds normal; no murmurs. Four months later: Light duty, symptoms worse.

CASE 22.—Driver —— (85694), aged 19. History: Never long-winded; relinquished heavy work as fitter on account of shortness of breath and became messenger. February, 1915, enlisted; fell out on doubling with breathlessness. October, to France. Shortness of breath on riding; to

hospital. December, again in hospital for same complaint. January, 1916, admitted. Examination: No abnormal signs. Five months later: Base duty, no better.

CASE 23.—Private —— (10918), aged 43. History: Bricklayer. Aged 40, pneumonia. One year breathless and giddy on hurrying. June, 1915, enlisted. Unable to double or march far because of breathlessness and also giddiness. Syncope three times. January, 1916, to France; reported sick with same symptoms and admitted to C.C.S. Examination: No abnormal physical signs. Four months later: Still in hospital, improving.

CASE 24.—Private —— (12016), aged 26. History: Age 20 (1910), enlisted. Good runner. In 1913, five weeks in hospital in Egypt with pyrexia of unknown origin. Two months later sent to England as D.A.H. Gave up running because of breathlessness. August, 1914, mobilised and sent to France. Exhaustion and pain in left breast at retreat from Mons. Since December similar pain and also breathlessness on marching or on lifting. Examination: Apex beat, fifth space, internal to nipple line. Short soft systolic murmur at apex, localised. Pulmonary second sound not accentuated. Four months later: Full duty, but no better.

CASE 25.—Private —— (11858), aged 22. History: Porter; light work; well. Good swimmer. August, 1914, enlisted. Training well borne. November, to France; no symptoms. February, 1915, to England with trench feet and lumbago. November, again to France. Found himself breathless after marching a hundred yards. Palpitation and giddiness under shell fire. January, 1916, admitted. Examination: Nervous temperament. No abnormal physical signs. Pulse-rate remained about 100, lying, during the five days under observation. Four months later: Seen personally in hospital, no better.

CASE 26.—Private —— (7605), aged 51. History: Mill worker. Several years palpitation and breathlessness on heavy exertion. September, 1914, enlisted. Excused doubling and marching because of shortness of breath, palpitation, and weakness of legs. November, 1914, to France. Since October, 1915, symptoms worse and accompanied by a weak feeling in the left breast. January, 1916, admitted. Examination: Apex beat, fifth space, in the nipple line. Heart sounds normal; no murmurs. Arteries, moderately thickened, perhaps more than usual at his age. Four months later: Light duty, no better.

CASE 27.—Private —— (18722), aged 41. History: Labourer. Three years breathless and giddy on heavy exertion. March, 1915, enlisted. Excused all drill and marching because of breathlessness. October, to France. Fell out, panting, on march, and admitted to C.C.S. January, 1916. Examination: Apex beat, fifth space, in the nipple line. Heart sounds normal; no murmurs. Four months later: Light duty, "fairly well."

CASE 28.—Private —— (55695), aged 30. History: Bricklayer; quite well. February, 1915, enlisted. Good marcher. In France, July, off duty one week with pain in back and limbs. On return to duty, palpitation and "a weak feeling going into my left arm," sweating, and giddiness produced by exertion or excitement. On running became "blown" and had pains across the front of the chest. Examination: No abnormal signs. Nine months later: After six months hospital, better; in India.

CASE 29.—Sapper —— (132522), aged 44. History: Labourer. Three years short-winded and troubled with palpitation. October, 1915, enlisted. November, to France. Fell out on marches with palpitation, exhaustion, and shortness of breath. Light duty. January, 1916, admitted. Examination: No abnormal physical signs. Four months later: No better, discharged permanently unfit.

CASE 30.—Corporal —— (11196), aged 19. History: Mechanic. Two years occasional sharp pain near left nipple, with some difficulty in breathing. August, 1914, enlisted. Doubling produced præcordial pain and breathlessness, but could march steadily. April, 1915, to France. A week before admission, while walking, sudden giddiness, shooting pain in left breast, and a stifling feeling. Palpitation. Bruised feeling from left nipple to armpit. Several similar attacks since, always with dyspnœa. September, admitted. Examination: Apex beat not felt. No abnormal physical signs. Eight months later: Home service, improved.

CASE 31.—Private —— (12259), aged 32. History: Age 18, pneumonia. Till age of 27, waiter; age 27 to 31, miner, occasional pain across front of chest after long shifts. No shortness of breath. August, 1914, enlisted. On doubling he always felt a gripping sensation across the front of the chest so that he could scarcely breathe. Similar symptoms on marching with full pack in training and since in France. August, 1915, admitted. Examination: Poor physique. No other abnormal physical signs. Nine months later: Full duty, but no better.

CASE 32.—Driver —— (69599), aged 37. History: Gardener. Several years attacks of giddiness, sweating, and weakness; syncope several times. Readily short of breath on exertion and subject to palpitation. February, 1915, enlisted. On riding or drilling, breathlessness, dull pain in left breast, palpitation, and exhaustion. Easily excited. Hands go cold and numb. August, admitted. Examination: Thin and nervous. No abnormal physical signs. Nine months later: Base duty, some improvement.

CASE 33.—Driver —— (24779), aged 45. History: Machinist. Amateur boxer till age of 25. Since 1913, occasional pain in back, otherwise well. September, 1914, enlisted. October, to France. February, 1915, pains in back and attacks of palpitation with breathlessness and exhaustion, induced by riding or by excitement. Occasional aching pain at apex beat on trotting. August, admitted. Examination: Apex beat not felt. No murmurs. A premature contraction heard after each normal beat. Nine months later: No better, discharged permanently unfit.

CASE 34.—Private —— (1813), aged 19. History: Carman. Sharp pain limited to anterior part of fifth left intercostal space, on severe exertion. Occasional attacks of dizziness and palpitation on exertion. August, 1914, enlisted. Similar symptoms during training; marked "Home service." June, 1915, to France. Attacks of dizziness, palpitation, and sweating. Præcordial pain (fifth left space only) and some breathlessness on exertion. August, admitted. Examination: Apex beat, fifth space, internal to nipple line. No murmurs. A premature contraction was heard after every few beats. Nine months later: Duty in India, no complaints in letters home.

CASE 35.—Corporal —— (279), aged 28. History: Japanner. Syncope at school and every few months since. Nervous. Fingers often "go dead." August, 1914, enlisted. Faint feelings at drill. June, 1915, to France. Exhaustion on march, also some breathlessness. Several weeks before admission, syncope and faint feelings. Pain from left nipple to costal margin when under fire. October, admitted. Examination: Depressed appearance; fingers cold. No abnormal physical signs in heart. Eight months later: Home service, symptoms slight.

CASE 36.—Sergeant —— (113181), aged 22. History: Teacher. Age 17, discontinued football because of palpitation, also rather short-winded. Age 18, joined Territorials. August, 1914, mobilised. Light work as instructor. August, 1915, to France. A month later in a severe engagement. Since then exertion or excitement more readily produces palpitation and giddiness. Wind fair. October, admitted. Examination: No abnormal physical signs. Eight months later: Light duty in France, no complaints.

CASE 37.—Sergeant —— (31673), aged 38. History: Age 18, enlisted. Age 23, during South African War, army clerk; palpitation troublesome, discharged from the Army as D.A.H. Clerk. Frequent palpitation with giddiness. Easily exhausted. August, 1914, re-enlisted. In France office work, frequent palpitation and exhaustion. Attacks of giddiness with these symptoms and gasping for breath. August, 1915, admitted. Examination: Nervous temperament. Apex beat, fifth space, in the nipple line. Heart sounds normal; faint systolic murmur at base only. Radial arteries moderately thickened. Ten months later: Light duty, still symptoms.

CASE 38.—Private —— (7571), aged 33. History: Shopman. Several years palpitation on exertion. Short-winded. August, 1914, enlisted. In training easily exhausted and rather short of breath. October, to France. May, 1915, to England with exhaustion; returned to France in October. On marching, weakness, especially of legs, and tightness across front of chest. November, admitted. Examination: No abnormal physical signs. Six months later: Still in hospital, no better.

CASE 39.—Driver —— (75068), aged 21. History: Labourer. Always short-winded and subject to palpitation. Age 18, enlisted, one year before war. Palpitation and some shortness of breath. August, 1914, mobilised. In France never under fire. Palpitation increased and now occurs on the least excitement. Slight breathlessness. December, 1915, admitted. Examination: Nervous temperament. Apex beat, fifth space, internal to nipple line. Short soft systolic murmur at apex, disappears on standing. Five months later: Duty in Greece, no complaints in letters.

CASE 40.—Private —— (1707), aged 27. History: Clerk. Age 20 away from work four months with indigestion, palpitation, and weakness; symptoms persisted. April, 1915, enlisted, easily exhausted in training. November, to France. On marching exhaustion and some palpitation and breathlessness. No indigestion. January, 1916, admitted. Examination: Apex beat, fifth space, in the nipple line. Heart sounds normal; no murmurs. Pulse-rate 100 to 110 for three days, then 80. Six months later: Still in hospital, much better.

AN ENTERIC-LIKE FEVER IN THE ANGLO-EGYPTIAN SUDAN.

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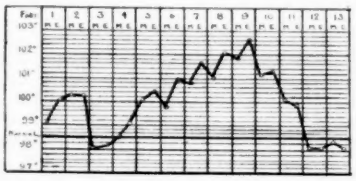
FEVERS caused by Eberth's bacillus and by the organism of paratyphoid A, and to a less extent paratyphoid B, are well known to occur in the Anglo-Egyptian Sudan, while Archibald, in the fourth report of these laboratories, has drawn attention to the presence of peculiar enteric-like fevers clearly separable from the above which are also met with at times. In addition to these varieties, last year we came across a number of cases of an enteric-like fever which were not caused by the ordinary organisms as shown by blood cultures, fæcal cultures, and agglutination tests. These cases caused us much trouble until we separated an organism from three of them which by agglutinating with the patient's serum during the later stages of the illness appeared to be the causal factor, while its cultural and biochemical reactions indicated that it belonged to the Typhoid-Colon Group. As this organism does not appear to have been described, and as its recognition compelled us to devise some scheme by which the bacilli of this group could be readily recognised, we venture to bring forward the following remarks.

Clinical Notes.

After a preliminary period of from 1–3 days during which the patient suffers from headache, constipation, and malaise, with marked (Chart 1) or slight fever (Chart 2), the febrile attack sets in gradually, being associated with marked constipation and headache and a disinclination for mental or bodily work, and with all the usual signs and symptoms of a mild attack of typhoid fever. As no organisms could be cultured from the blood calomel and saline were administered, and these relieved the headache but did not appear to influence the course of the fever. Intestinal antiseptics of various descriptions were tried, but they appeared to be useless. The diet was that usually given to a typhoid patient.

CHART 1.



This chart illustrates the precursory fever which may occur before the real attack, and also a typical attack without a relapse.

After about seven days from the commencement of the true rise of temperature the fever, which had gradually risen (Charts 1 and 2) to a maximum lying between 101° and 103° F., subsided quickly and in about another three days fell to normal when the disease ended (Chart 1), or to nearly normal, and was followed by a relapse of a more irregular and prolonged nature (Chart 2). When the temperature subsided all symptoms gradually disappeared and the patient felt quite well, but if the relapse occurred the headache, lassitude, constipation, &c., returned. At no time was any patient seriously ill and at no time did a purgative produce other than good effects.

The heart, lungs, liver, and spleen remained normal, and except for the usual febrile changes the urine was also normal. Except for headache the nervous system was normal, and no skin eruptions were noticed. The cardinal features of the illness were constipation, fever, relatively slow pulse, headache, malaise, and a general feeling of illness. The constipation naturally accentuates the inconvenience due to piles if present, which may cause unnecessary alarm if bleeding occurs.

As no organism could be found in the blood it must be concluded that *no marked septicæmia* could have been present, by which of course it is not meant that large quantities of blood—e.g., 10 c.c.—might not have shown an organism, but unfortunately it did not occur to us to use more than small quantities, 1 to 2 c.c. of blood, as usual well diluted with broth, for this purpose. There being no marked septicæmia, it appeared to us that the fever was mainly toxæmic in nature, but it attracted local attention at the time because of its clinical resemblance to a mild attack of typhoid fever.

Since recovery some of the patients whose histories are known to us have kept quite well although more than six months have elapsed. The mortality was nil. The blood serum of these patients, as already stated, did not agglutinate B. typhosus or B. paratyphosus A or B.

Causal Organism.

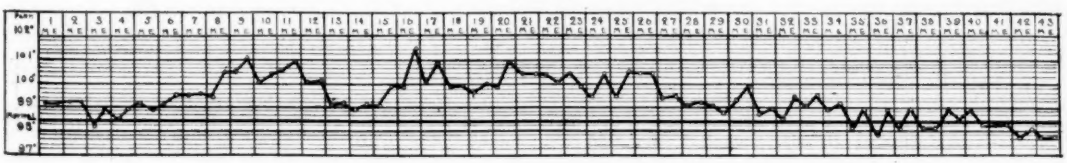
A minute piece of the fæces, obtained in a sterile Petri dish from a patient, was taken up with the tip of a platinum needle and placed in the centre of a plate of Drigalski-Conradi's medium, over which it was distributed by thoroughly rubbing it in all directions by means of a sterile glass spreader. At the end of 24 hours bluish clear dewdrop colonies varying in size and regular in outline could be seen lying between the typical colon colonies. Later these colonies became slightly pink. When similarly plated on Fawcus's medium they appeared at the end of 24 hours as clear colonies regular in outline and varying in size lying among the typical colon colonies.

When these colonies were investigated they were found to be composed of non-motile, Gram-negative bacilli which fermented lactose in liquid media with the production of acid and gas, and in subcultures produced red colonies on MacConkey's bile-salt lactose agar. This organism was agglutinated either completely or nearly completely with the patient's serum in dilution of 1 in 50, and less completely 1 in 100, in one hour after the tenth day of the illness. Eberth's bacillus and the paratyphoid bacilli were not agglutinated though tested repeatedly by microscopical methods. The agglutination reactions, together with the disappearance of the organism from the motions after recovery, induce us to believe that it was the causal factor of this exceedingly mild type of fever, which we regard as probably merely toxæmic and producing but slight bodily reactions.

The characters of the organism as grown from three patients were as follows:—

Morphology.—It is a Gram-negative, non-motile rod measuring on an average about 4 microns in length by 1 in breadth. When treated with carbol-thionin or other stains it does not show any polar staining, being on the contrary quite homogeneous and having rounded ends.

CHART 2.



In this chart there is but slight precursory fever, while the real attack ends on the fourteenth day and is followed by a relapse.

Biological characters.—It grows best aerobically at 37° C., but it is a facultative anaerobe and can grow quite well at 20–22° C. and at 40° C.

Cultural characters.—It grows well on agar-agar at 37° C., forming either isolated, raised, roundish, white colonies or an elevated whitish surface growth. It also forms a white growth, mainly along the track of the stab, in gelatin which is

not liquefied. On blood serum, which is not liquefied, it produces a growth similar to that on agar-agar, but the individual colonies or the confluent growths are larger and more extensive in a given time and are also moister. On potato it forms a yellowish surface growth in 48 hours, while in broth it gives rise to a general turbidity without any pellicle formation.

Biochemical reactions.- It forms acid and gas in the following carbohydrate and alcohol media :—*Monosaccharides:* Hexoses —glucose, lævulose, and galactose; pentoses—arabinose and rhamnose. *Disaccharides:* Maltose and lactose. *Glucoside:* Salicin. *Alcohols:* Trihydric—glycerol ; pentahydric—adonitol ; hexahydric—dulcitol, mannitol, and sorbitol.

It gives rise to neither acid nor gas in :—*Disaccharide:* Saccharose. *Trisaccharide:* Raffinose. *Polysaccharides:* Dextrin, starch, and inulin. *Glucoside:* Amygdalin. *Alcohol:* Erythrol. *Phenol:* Inosite.

With regard to these formations it must be noted that it often failed to ferment lactose when first plated from fæces on Drigalski-Conradi's medium and on Fawcus plates, but it never failed in liquid lactose media to produce acid and gas. It was this peculiarity on the solid media which enabled us to pick it out. Sometimes it fails to ferment adonitol, but more generally it produces acid and gas.

It acidified but it did not clot *litmus milk.* It produced *indol* and reduced *nitrates* and *neutral red*, though it failed to give the *Voges-Proskauer* reaction.

Serum reactions.—As already stated, it agglutinated either completely or nearly completely with the patient's serum about the tenth day of illness and diluted 1 in 50, and less completely 1 in 100 in one hour. It completely failed to agglutinate when tested with polyvalent colon serum of high titre which agglutinated *B. coli*, Escherich, and was said to be capable of agglutinating several different colon strains ; the dilutions employed being 1 in 50 and 1 in 100 and the time being one hour. The serum was in good condition, having been tested against the laboratory colon strain.

It agglutinated with specific paratyphoid A serum in a dilution of 1 in 50 after one and a half hours generally only partially but in one instance completely, but its agglutination in 1 in 100 dilutions was feeble and in 1 in 1000 and upwards was absent. As this serum completely agglutinated the laboratory strain of *B. paratyphosus A* up to 1 in 10,000 in one and a half hours and also completely agglutinated in dilution up to 1 in 5000 and less completely 1 in 10,000 an organism giving the reactions of *B. paratyphosus A* and recently isolated from a case of fever in Port Sudan, we conclude that it was in good condition.

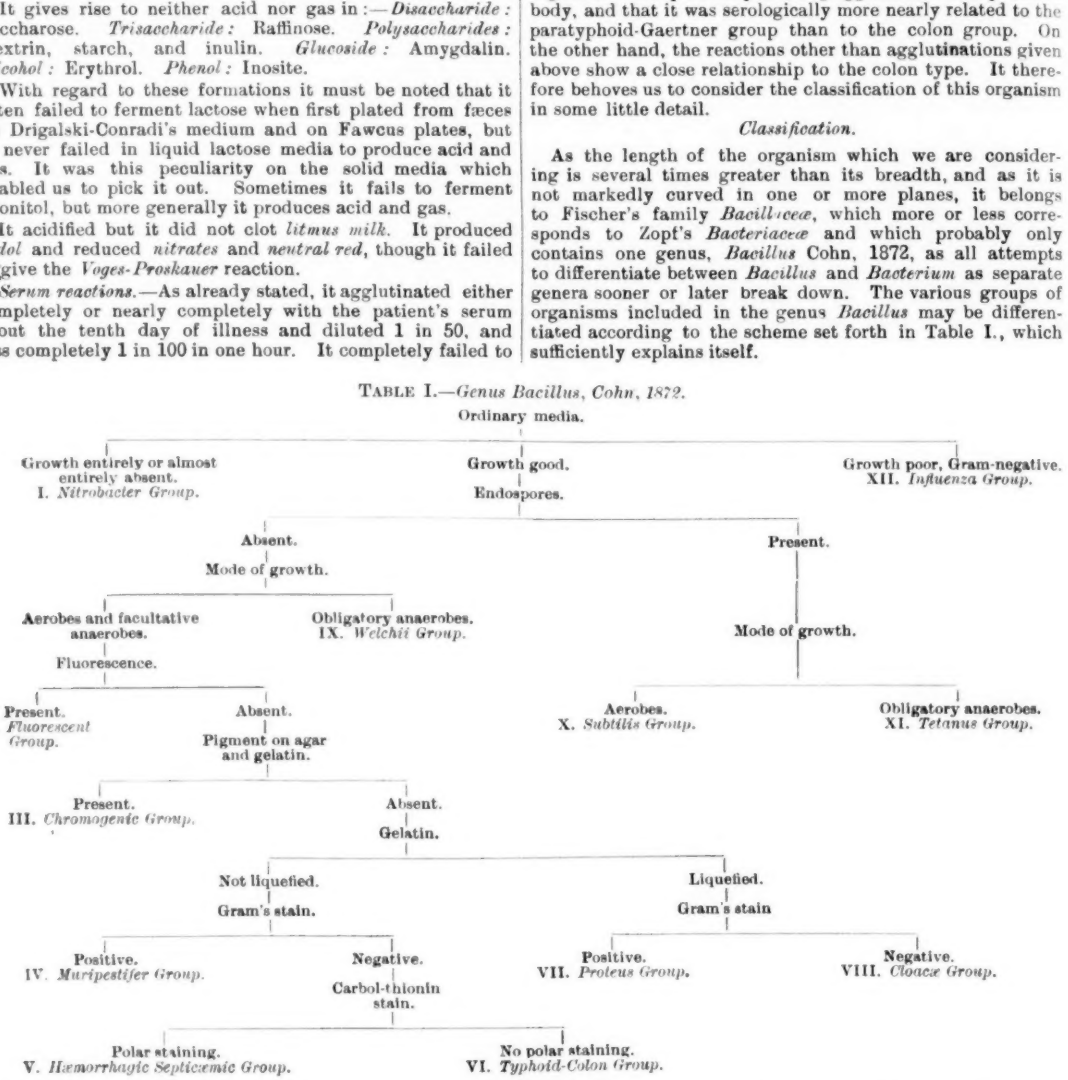
It also agglutinated with specific paratyphoid B serum, but only very partially in dilutions of 1 in 50, and hardly at all in those of 1 in 100 in one and a half hours, and not at all in greater dilutions. This serum was also shown to be in good condition by agglutinating at the time the laboratory strain of *B. paratyphosus B* completely in dilutions extending from 1 in 50 to 1 in 10,000 in one and a half hours.

These agglutinations, in our opinion, showed that the organism was capable of producing agglutinins in the patient's body, and that it was serologically more nearly related to the paratyphoid-Gaertner group than to the colon group. On the other hand, the reactions other than agglutinations given above show a close relationship to the colon type. It therefore behoves us to consider the classification of this organism in some little detail.

Classification.

As the length of the organism which we are considering is several times greater than its breadth, and as it is not markedly curved in one or more planes, it belongs to Fischer's family *Bacillaceæ*, which more or less corresponds to Zopf's *Bacteriaceæ* and which probably only contains one genus, *Bacillus* Cohn, 1872, as all attempts to differentiate between *Bacillus* and *Bacterium* as separate genera sooner or later break down. The various groups of organisms included in the genus *Bacillus* may be differentiated according to the scheme set forth in Table I., which sufficiently explains itself.

TABLE I.—*Genus Bacillus, Cohn, 1872.*



Comparing now the characters described above, for the organism which we are discussing, with the diagnostic tests laid down in this table, we conclude that as this organism grows well on ordinary laboratory media without the formation of endospores, and is a facultative anaerobe which is not fluorescent and does not produce pigment nor liquefy gelatin and does not exhibit polar staining, it belongs to the Typhoid-Colon Group.

Typhoid-Colon Group.

The division of this group into subgroups may be accomplished in a more or less natural manner by means of *monosaccharides*, *disaccharides*, and *trisaccharides*, with the aid of the *alcohol* mannitol.

Applying these tests we first differentiate a *non-fermenting division* which may be termed the *Alcaligenes Subgroup* because its type *Bacillus alcaligenes*, Petruschky, 1896 (more commonly and less correctly called *B. fæcalis alcaligenes*), is usually said to produce neither acid nor gas in sugar media, though it is true that Vourloud has asserted that it can give rise to slight acidity in lævulose and glycerol.

All the other organisms included in the group ferment the monosaccharide glucose, but two subgroups which may be termed the *Typhoid Subgroup* and the *Dysentery Subgroup* are distinguished by not completely fermenting this sugar, and therefore failing to produce gas. They also can and do ferment disaccharides, and some of them, even the trisaccharide raffinose, producing either acidity or sometimes only slight acidity, and therefore form a natural *partial fermenting division*.

The next step concerns the organisms which may be termed the *monosaccharide fermenters*, in which the monosaccharide glucose is completely fermented with the formation of acid and gas, but this large collection of organisms can be further differentiated by means of their action upon the disaccharide lactose. Three disaccharides are in common use in the laboratory, and it would appear as though organisms were, as a rule, able to ferment maltose more easily than lactose and saccharose, and lactose more easily than saccharose.

With regard to lactose two subgroups, the *Paratyphoid-Gaertner* and the *Morgan I.*, fail to ferment it, and this can be used as a distinguishing character, while the two subgroups may be differentiated from one another by the fermentation or non-fermentation of the alcohol mannitol. A number of organisms, however, ferment lactose, producing either acidity only or acid and gas. All these bacilli are closely related to the *B. coli*, Escherich, but some of them may be separated off because they possess the distinguishing feature of a capsule, though it must be admitted that no hard-and-fast line can be drawn between this and the Colon Subgroup, as there are connecting links in the shape of *B. aërogenes* in which the capsule is difficult to demonstrate, and *B. acidi lacti*, both of which may, with convenience, be placed in the Colon Group.

This encapsulated group of bacilli has been carefully reviewed by Fricke in 1896, Clairmont in 1902, Perkins in 1904, Abel and Hallwacks in 1913, and Fitzgerald in 1914, and may be termed the *Encapsulated Subgroup*, otherwise known as Friedländer's B. Pneumoniæ Subgroup or the Mucus Capsulatus Subgroup. It is composed of short, non-motile, Gram-negative, encapsulated pleomorphic bacilli which do not form spores, do not liquefy gelatin, and which ferment glucose and lactose, but as regards the latter sometimes they give rise to acidity only, though more commonly they form acid and gas.

There also appears to be a well-defined group of human intestinal bacilli which ferment glucose, giving rise to acid and gas, but which only partially ferment lactose, giving rise to acid only without gas formation, while they do not possess a capsule. These organisms we gather together into the *Wesenberg Subgroup*, and refer readers interested therein to the writings of Alexander quoted in the references.

The remaining organisms may be further subdivided by their action upon the trisaccharide raffinose, and those which produce acid and gas therein may be collected together into the *Colon Subgroup* with *B. coli*, Escherich, as the type species, while those which fail to ferment this carbohydrate can be placed in the *Enterieus Subgroup* with *B. enterieus*, Castellani, as the type species.

The distinguishing characters of these various subgroups may be represented in a diagnostic table given below, which shows that the various groups form a natural sequence of—Non-fermenters, partial fermenters, complete monosaccharide fermenters, complete disaccharide fermenters, and complete trisaccharide fermenters. Moreover, these form a sort of natural sequence, as may be demonstrated by quantitative estimations of these sugars fermented by the organism which we are considering, which are as follows:—

Glucose	3·5 c.c. of N/20 KHO.	
Lactose	2·7 c.c.	,, ,,
Raffinose...	0·0 c.c.	,, ,,

The scheme suggested for the differentiation of these various subgroups is as follows:—

Diagnostic Scheme of Typhoid-Colon Subgroups.

Non-fermenters.

A. Glucose, lactose, raffinose, and mannitol not fermented ... ... I. *Alcaligenes Subgroup.*

Partial Fermenters.

B. Glucose partially fermented, only acid and no gas produced; lactose, raffinose, and mannitol may or may not be partially fermented:—
I. Motile ... ... II. *Typhoid Subgroup.*
II. Non-motile ... ... III. *Dysentery Subgroup.*

Complete Monosaccharide Fermenters.

C. Glucose completely fermented with the production of acid and gas:—
I. Lactose not fermented:—
(*a*) Mannitol and raffinose not fermented.
IV. *Morgan I. Subgroup.*
(*b*) Mannitol and sometimes raffinose fermented with production of acid and gas.
V. *Paratyphoid-Gaertner Subgroup.*

Disaccharide Fermenters.

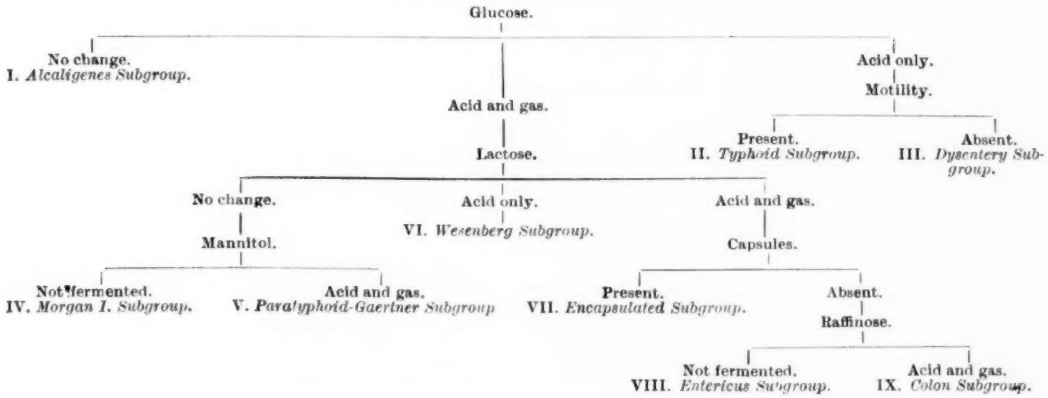
II. Lactose partially fermented with the formation of acid but no gas; mannitol partially or completely fermented; raffinose usually not fermented.
VI. *Wesenberg Subgroup.*
III. Lactose completely fermented with the production of acid and gas:—
(*a*) Bacilli encapsulated.
VII. *Encapsulated Subgroup.*
(*b*) Bacilli non-encapsulated:—
1. Raffinose not fermented.
VIII. *Enterieus Subgroup.*

Trisaccharide Fermenters.

2. Raffinose completely fermented with the formation of acid and gas.
IX. *Colon Subgroup.*

This scheme may be tabulated as set forth in Table II.

TABLE II.—*Typhoid-Colon Group.*



With regard to the organism with which we are at present concerned, it will be noted that as it produces acid and gas in glucose and lactose, while it neither possesses a capsule nor ferments raffinose, it must be placed in the subgroup which we term the *Entericus Subgroup*, which we must now consider in detail.

Entericus Subgroup.

As indicated above, this collection of organisms is composed of *short, homogeneous, non-encapsulated, Gram-negative bacilli which produce a whitish non-fluorescent growth under aerobic and anaerobic conditions on agar-agar at 37° C. and on gelatin, which is not liquefied, at 20° C., and are capable of producing acid and gas in glucose and lactose but not in raffinose.* The oldest organism with which we are acquainted which is capable of being classified in this group is that described by Castellani as *B. entericus*.

As we do not happen to have the Ceylon Medical Reports before us at the present time we are uncertain as to the exact date of the first description, but details with regard to the organism can be found in Castellani and Chalmers (1910) "Manual of Tropical Medicine," first edition, p. 991, or (1913) second edition, pp. 1380, 1381; Castellani (1912), *Journal of Tropical Medicine and Hygiene*, xv., pp. 164, 165.

B. entericus is a non-motile, Gram-negative bacillus which does not liquefy gelatin and produces turbidity in broth with a slight pellicle, and gives the indol but not the Voges-Proskauer reaction. It produces acid and gas in glucose, lævulose, galactose, arabinose, maltose, and lactose, but not in saccharose or raffinose, and it can also produce acid and gas in dextrin, dulcitol, mannitol, and sorbitol, but not in adonitol.

The next organism which must be placed in this group is *B. giumai*, which was described by Castellani in the Report of the Advisory Committee for the Tropical Diseases Research Fund for the year 1912 and published in 1913. He isolated the organism from a case of appendicitis and named it after his native Uganda servant of ten years previously who had recently died of sleeping sickness.

B. giumai is a non-motile, Gram-negative bacillus which produces growths on agar-agar, glycerin agar, and serum, resembling the bacilli of the typhoid and dysentery groups, and does not liquefy gelatin, but it produces indol and renders litmus milk first acid and then alkaline. It gives rise to acid and gas in glucose, laevulose, galactose, arabinose, rhamnose, maltose, and lactose (the production of gas in this sugar is very slight), but neither acid nor gas in saccharose or raffinose. It also ferments dextrin, salicin, and sorbitol, forming acid and gas, and glycerol, giving rise to only acidity, while it does not ferment inulin, amygdalin, erythrol, adonitol, dulcitol, mannitol, or inosite.

As the organism which we are considering also comes in this subgroup and appears to differ from *B. entericus* and *B. giumai* we give it the name *B. khartoumensis* for purpose of differentiation, and we now compare the reactions of the three bacilli (excluding the group reactions) by means of Table III.

As the reactions given above indicate that the Entericus Subgroup is closely related to the Colon Subgroup it appears to us to be advisable to consider the latter in greater detail.

The Colon Subgroup.

The organisms gathered together to form this subgroup of the Typhoid-Colon Group are *short, homogeneous, non-encapsulated, Gram-negative bacilli with rounded ends which produce a whitish non-fluorescent growth under aerobic and anaerobic conditions on agar-agar at 37° C. and on gelatin, which is not liquefied, at 20° C., and are capable of producing acid and gas in glucose, lactose, and raffinose.* It appears to us that the first division of this group should be made, as suggested by Smith in 1895, into those organisms which produce and those which do not produce indol. We are aware that much difficulty has been experienced by some workers with the indol test, but we refer the reader to Kligler's paper quoted in the references for details as to this test.

It also seems to us that the indol producers can be further subdivided, as was pointed out by Durham in 1901, by the fermentation or non-fermentation of saccharose; the former subdivision being known as the *Communior Section*, while the latter can be called the *Communis Section*.

Further differentiation may be accomplished by the use of dulcitol as suggested by MacConkey. In this way a diagnostic scheme may be composed as follows:—

Escherich's Colon Subgroup.

A. Smith's Indol-Producing Division.

I. Durham's Communior (Saccharose-fermenting) Section.

(*a*) *Dulcitol fermenters.*

1. *B. badullensis*, Castellani, 1913. Isolated from normal motions and cases of chronic enteritis in Ceylon by Castellani.

2. *B. neapolitanus*, Emmerich, 1884. First found in human fæces by Emmerich in Naples, and has been found by Castellani in normal motions in Ceylon, by Archibald in the Sudan, by Clemensha in India, and in cow and goat dung in the Sudan by Archibald.

3. *B. oxytocus* (Wyssokowitsch), Flügge, 1886. Originally isolated from stale milk and called *B. oxytocus perniciosus* and found in the stools of agchylostome patients in Ceylon by Castellani, in human fæces in India by Clemensha.

4. *B. paraentericus*, Castellani. Found in human fæces in Ceylon by Castellani.

5. *B. pseudocoli*, Castellani, 1909. Found in the motions of patients suffering from agchylostomiasis in Ceylon.

(*b*) *Dulcitol not fermented.*

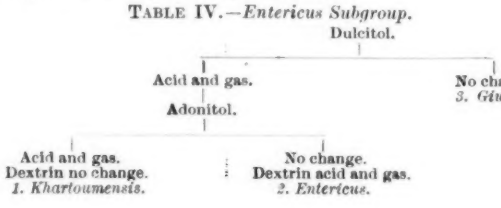
6. *B. coscoroba*. Said to be first described in the *Annales de l'Institut Pasteur* for 1900 as being isolated from an epidemic occurring in a breed of swans called *Cygne de Coscoroba*, and described by Clemensha as occurring in human fæces in India and by Archibald in the Sudan.

TABLE III.—*Differential Table of the Members of the Entericus Subgroup.*

Classification.	Monosaccharides.				Di-saccharides.		Poly-saccharides.		Gluco-sides.		Alcohols.						Phenol.	Other reactions.		
	Hexoses.		Pentoses.																	
Names.	Lævulose.	Galactose.	Arabinose.	Rhamnose.	Maltose.	Saccharose.	Dextrin.	Inulin.	Amygdalin.	Salicin.	Glycerol.	Erythrol.	Adonitol.	Dulcitol.	Mannitol.	Sorbitol.	Inosite.	Motility.	Litmus milk.	Indol.
B. entericus, Castellani, 1909.	A.G.	A.G.	A.G.	—	A.G.	0	A.G.	0	—	—	—	—	0	A.G.	A.G.	A.G.	—	0	0	+
B. giumai, Castellani, 1913.	A.G.	A.G.	A.G.	A.G.	A.G.	0	A.G.	0	0	A.G.	A.	0	0	0	0	A.G.	0	0	A. Alk.	+
B. khartoumensis, Chalmers and Macdonald, 1916.	A.G.	A.G.	A.G.	A.G.	A.G.	0	0	0	0	A.G.	A.G.	0	A.G.	A.G.	A.G.	A.G.	0	0	A.	+

These differences will be referred to in greater detail when we define *B. khartoumensis*, and all that need be done at present is to give a diagnostic table.

TABLE IV.—*Entericus Subgroup.*



"It will be noted that Durham's *B. communior* really refers to a series of and not to a single organism."

II. Durham's Communis (Saccharose-non-fermenting) Section.

(*a*) *Dulcitol fermented.*

1. *B. cavicida*, Brieger, 1884. First obtained by Brieger in human fæces in Europe and found by Clemensha in India.

2. *B. coli*, Escherich, 1885. This is the well-known B. coli communis.

3. *B. schafferi*, von Freudenreich, 1890. Found first in cheese, later by Archibald in human and bovine fæces in the Sudan, by Clemensha in human fæces in India and by Castellani in Ceylon.

(b) Dulcitol not fermented.

4. *B. acidi lactici*, Hueppe, 1884. First found in milk, and subsequently by Clemensha in human fæces in India, and by Castellani in Ceylon.

5. *B. vesiculosus*, Henrici, 1894. Discovered in cheese by Henrici, and subsequently found in human fæces in the Sudan by Archibald, and by Clemensha in India.

6. *B. grünthal*, Castellani. Found by Castellani in human fæces in Ceylon.

B. Smith's Indol Non-Producing Division.

I. Durham's Communior Section.

1. *B. aërogenes*, Escherich, 1886, which is often called B. lactis aërogenes, and was found in the human alimentary canal in Europe, and subsequently in India by Clemensha.

2. *B. gasoformans*, Eisenberg, 1891, which was first discovered in water, but later was recognised in human fæces in India by Clemensha.

grown on lactose media forms tubercle-like colonies which are red and white.

5. *B. tropicalis*, Castellani, 1910, which was first isolated from human fæces in Ceylon.

A method of differentiation of these various organisms is set forth in Tables V., VI., and VII.

After considering the above analysis it is obvious that if the importance of the non-fermentation of the trisaccharide raffinose had not been realised or if that sugar had not been available we should have considered that *B. khartoumensis* was closely allied to those organisms which are shown in Table VI. and especially to *B. schafferi*, which is still very imperfectly known. It would, however, have differed from this organism in not clotting milk and in fermenting adonitol. We therefore are of the opinion that even when compared against the raffinose-fermenting Colon Subgroup

TABLE V.—*Escherich's Colon Subgroup.*

A. Smith's Indol-Producing Division.

I. *Durham's Communior (Saccharose-fermenting) Section.*

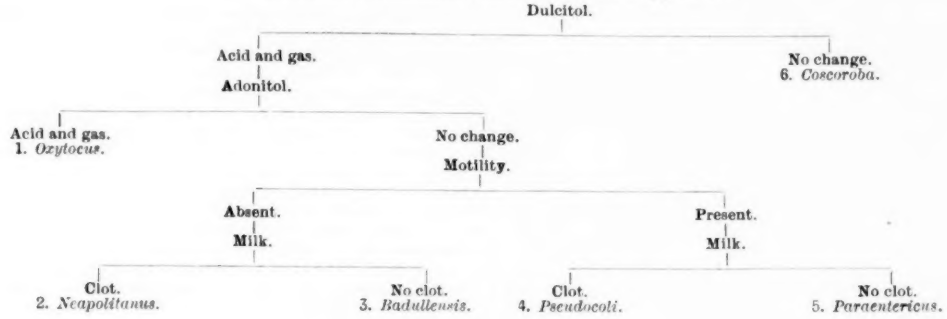


TABLE VI.—*Escherich's Colon Subgroup.*

A. Smith's Indol-Producing Division.

II. *Durham's Communis (Saccharose-non-fermenting) Section.*

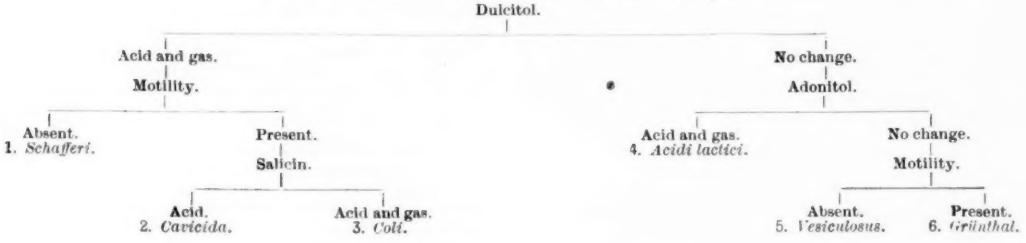
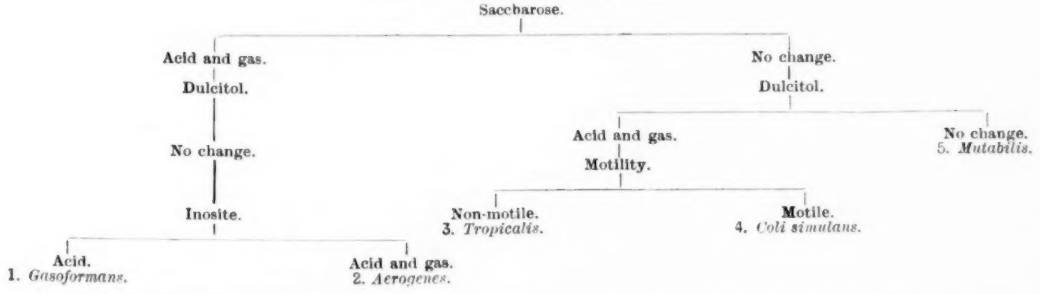


TABLE VII.—*Escherich's Colon Subgroup.*

B. Smith's Indol-Non-Producing Division.



II. Durham's Communis Section.

3. *B. coli simulans*, Norman Hall, which is known as B. coli-like, Norman Hall, and which we have brought into accord with modern nomenclature. It must not be confused with *B. coli similis*, Sternberg = *B. coli immobilis*, Germano and Maurea, which is not to be distinguished from *B. schafferi*. We have been unable to refer to the original reference as to this organism.

4. *B. mutabilis*, Massini, described first in the *Archiv für Hygiene*, vol. lxi., p. 250, as a coli-like organism which when

it appears to be a distinct organism, and we will therefore now proceed to our deductions on the work given above.

Conclusions.

By means of a study of the above schemes and tables of classification it will be seen that *B. khartoumensis*, Chalmers and Macdonald, 1916, can be differentiated from the more important members of the Colon Subgroup, and that it belongs to the Entericus Subgroup, which can be easily distinguished from the other Typhoid-Colon Subgroups.

As regards the Entericus Subgroup it can be distinguished from *B. giumai*, Castellani, 1913, by not producing acid and gas in dextrin, and by producing acid and gas in glycerol, adonitol, dulcitol, and mannitol, and from *B. entericus*, Castellani, 1909, by not fermenting dextrin, and by producing acid and gas in adonitol and acidity in litmus milk.

We therefore conclude that it is a distinct species and we define it as follows. "A short, non-motile, homogeneous, non-encapsulated, Gram-negative bacillus with rounded ends, which produces a whitish, non-fluorescent growth under aerobic and anaerobic conditions upon agar-agar at 37° C., and on gelatin, which is not liquefied, at 20° C. and which is capable of producing acid and gas in glucose, lactose, adonitol, dulcitol, and mannitol, but not in saccharose, raffinose, or dextrin, and which gives rise to acidity without clot in litmus milk and is also an indol producer. It was isolated from the fæces of persons suffering from an enteric-like fever in Khartoum and Omdurman."

It failed to agglutinate with a colon specific serum of high titre, but it showed group reactions with high-titre paratyphoid A and B specific sera. It is therefore related not merely to the Colon Subgroup but to the Paratyphoid-Gaertner Subgroup, and we consider it and possibly the whole Entericus Subgroup to be connecting links between these two collections of organisms.

As it was present in the patients' fæces during the illness and absent after recovery, and as it agglutinated with the patients' serum, even though we were unable to obtain it from the peripheral blood during the attack, we consider that it was the causal organism of the attacks of *enteric-like fever*, using this term in its broadest sense.

It gives us much pleasure to acknowledge the trouble taken by Dr. Papatheodorou, of Khartoum, and Dr. Muzhir, of Omdurman, in providing us with material for this paper.

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THE GANGRENE OF WAR: GASEOUS CELLULITIS OR EMPHYSEMATOUS GANGRENE.

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THE most common form of gangrene met with in the present campaign is an acute infection due to the bacillus of malignant œdema, the Bacillus aërogenes or Bacillus perfringens. The actual cause of gangrene is the presence in the wound of the pathogenic organism which finds a suitable medium in which to grow in the lacerated and devitalised tissue of gunshot wounds. In its most typical and dangerous forms gas gangrene occurs associated with deep wounds, the infection being carried into the tissues by the missile which inflicts the wound. It is therefore a primary and deep infection. Once the wound is infected the occurrence of gangrene is favoured by several conditions: 1. Delay in cleansing the wound and removing the foreign body. 2. Excessive damage to the tissues and the presence of necrosed tissue and blood clot. 3. Interference with the blood-supply. The tension produced by the effused blood, the gas, and other products of inflammation produce a vicious circle. 4. The presence of pus-forming organisms. This virulent infection may attack any gunshot wound and forms one of the outstanding dangers to which injuries are subject in war. The complication of an injury by emphysematous gangrene is usually discovered two or three days after the injury, but it may begin within a few hours. A septic wound cannot be considered safe from its attack until the wound has become clean and healthy. Cases have occurred in comparatively small and unimportant wounds.

The following forms of the disease are fairly distinct, but it must be understood that these varieties are grades of the same disease, passing from one to another. They are grouped here because they form more or less distinct clinical entities requiring entirely different prognosis and treatment.

1. *Anaerobic Infection without Gaseous Cellulitis.*

In this type there is, as yet, no definite spreading cellulitis nor gas in the tissues, but there is discolouration of the skin and gas in the discharge from the wound with characteristic odour. This type, if untreated, goes on to gaseous cellulitis, of which it is really an early stage.

2. *Gaseous Cellulitis.*

This may be local or diffuse. The local variety is fairly amenable to treatment. The infection commences with a local cellulitis with a spread of gas in the tissues, and is usually associated with a deep septic wound. Compound fractures of large pipe-bones contribute a high proportion of the cases, and those with fracture of the femur yield the most fatal results. In the local form the cellulitis is limited to the neighbourhood of the wound and apparently has no tendency to spread to the rest of the limb. These cases react well to the simple treatment of multiple incision, and some would no doubt recover without special treatment. They account for the majority of successful cases and have made the reputation of several remedies. In the diffuse form the cellulitis involves the whole limb and often spreads to the deep tissues of the limb and the trunk. The skin around the wound is discoloured, but the more distant skin is unchanged. The skin may be mottled with blue, purplish, or grey blotches, but never presents the bright colour seen in ordinary cellulitis. The limb is very much swollen and is œdematous. The tissues which are permeated by the gas yield a crackling sensation to the touch similar to that found in surgical emphysema. The circulation in the hand or foot is not affected until quite late. The cellulitis appears to be mainly confined to the subcutaneous tissues, the gas penetrating the cellular tissue in advance of the cellulitis. The patient's general condition is soon affected unless the cellulitis is limited to a small area. There is profound toxæmia with a rapid pulse of small volume, the hands and feet are cold, and vomiting and hiccough often occur. In spite of this the patient may not complain of feeling very ill.

Treatment.—The treatment of the wound does not differ from the treatment of other septic gunshot wounds. The wound should be freely opened and all devitalised tissue excised. The missile should be removed and the wound searched for other septic matter, such as fragments of clothing. Very free drainage, in a dependent position, should be provided. The cellulitis, whether local or general, should be treated by numerous incisions into the subcutaneous tissues. In a local case, affecting the calf of the leg, three or four incisions, several inches in length, should be made down to, but not through, the deep fascia. In addition to these deep incisions half-a-dozen two-inch incisions through the skin, just entering the superficial fascia, should be made. The wound may be dressed with hypertonic saline solution. The infection being an anaerobic one and mainly limited to the cellular tissue, the injection of hydrogen peroxide into the cellular tissue at a point proximal to the cellulitis has been undertaken with a view to checking the advance of the disease. About 20 c.c. of a ten-volume solution is injected by means of a syringe into the circumference of the limb above the infection. The necessity for this is not established. Collapse, sloughing, and other bad results have followed this treatment. If the infection be localised and the patient's general condition good, arm or leg baths of peroxide of hydrogen may be given. Usually the limb is left exposed and continuous irrigation with 5 per cent. saline solution employed. If not effectively treated, the gaseous cellulitis may advance to a massive gangrene of the whole limb, the milder condition passing into the more fatal one with the greatest rapidity. The pulse becoming imperceptible in the extremity of the limb, the hand or foot becoming cold or numb, are indications for immediate amputation.

3. *Localised Gangrene.*

Around a septic wound a gaseous cellulitis occurs, and bubbles of gas may be detected in the pus coming from the wound. The skin surrounding the wound becomes mottled-purple in colour, and emphysematous crackling can be felt for a short distance beyond the gangrenous area. The case may remain one of localised gangrene or may be overcome by the infection and pass into a case of gangrene of the limb. Extremely foul, dirty fluid, containing bubbles of gas, exudes from the wound, but typical pus is absent or obscured by the gangrenous discharge. An orange-coloured discharge, which stains dressings, is sometimes present. A large number of wounds secrete pus or discharge containing bubbles of gas, although gas is not actually present in the tissues. These wounds recover if treated early by the ordinary method of treatment without extensive operation. In some cases the "gas" has been sucked in owing to movements of the limb. The "gas" is not mixed with the pus in the same way in these cases and the characteristic odour is absent.

Treatment.—The devitalised tissues should be excised, and the usual cleansing and drainage operation should be performed on the wound if it has not already been done. Multiple incisions should be made in the emphysematous area. Hypertonic treatment gives good results. The discoloured area should be marked, and if after such treatment it is found to be spreading, amputation should be performed. If the hand or foot is found to be cold and numb and pulseless, it is dangerous to wait until further spread of the local gangrene takes place and amputation should be performed. Sometimes free incision of the calf will restore the circulation of the foot. In such cases the feeble circulation is due to the pressure of the exudate on the vessels under the deep fascia.

Illustrative case of localised gangrene (Fig. 1).—Sergeant ——, wounded on March 2nd with a fragment of high-explosive shell; entrance wound on the outer side of the leg about middle of fibula; no exit found. Wound dressed at field ambulance and patient arrived at base on March 4th. Leg swollen and painful and œdematous over tibia; large red patch over middle of calf, extending round to inner side of leg. X rays showed shell fragment in calf muscles and comminuted fracture of fibula. Entrance wound was excised and shell fragment removed. Incisions were made over the inner side of the leg through extending red patch and in middle of calf. Small quantity of gas and pus escaped and calf muscles felt soft and spongy. The wounds were well irrigated with eusol and tubes were inserted. Temperature 100° F. (fell to 98·4°); pulse 110 (fell to 96). The pus showed B. aërogenes capsulatus and streptococci. The patient made a good recovery.

FIG. 1.

Gas gangrene of calf (localised). Entrance wound on outer side of leg, margins grey and sloughing, with area of congestion around. Large black shaded patch on back of leg represents area of acute congestion, centre showing greyish slough, while lighter shading shows the extending patch on surface of skin.

4. *Massive Gangrene.*

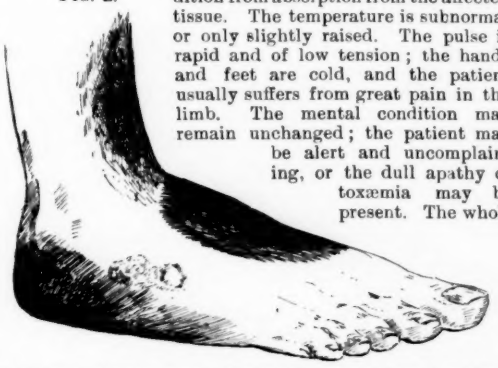
This corresponds to the distribution of a vessel and may affect part or the whole of a limb. The organisms develop in the part which is rendered anæmic by damage to the blood-supply of the infected area. Examples of this type may be found in gangrene affecting the gluteal, rectus femoris, the adductor, and hamstring groups of muscles.

Illustrative case of massive gangrene (Fig. 2).—Private ——, wounded on March 5th with shrapnel; first and second metatarsals comminuted, shrapnel passing back, fracturing os calcis and having exit wound in heel. The wound was packed with cyanide gauze and the patient transferred to the base on March 7th. The foot was very much swollen and had two bullæ on the dorsum. The inner side of the foot was black, with grey patches, while the ankle-joint was red and œdematous. There was a foul-smelling discharge containing gas from the wound, which contained B. aërogenes capsulatus. Amputation was performed at the middle third of the leg by the open method. The patient made an uninterrupted recovery.

5. *Gangrene of the Limb.*

The infection is usually apparent within the first three days after the receipt of the injury. Massive gangrene of the whole limb develops and the limb dies *en masse*. The process is extremely rapid, a marked change taking place within a few hours. On several occasions a limb which has been considered healthy in the evening has been discovered to be affected with diffuse gangrene the following morning. The patient is in a highly toxic condition from absorption from the affected tissue. The temperature is subnormal or only slightly raised. The pulse is rapid and of low tension; the hands and feet are cold, and the patient usually suffers from great pain in the limb. The mental condition may remain unchanged; the patient may be alert and uncomplaining, or the dull apathy of toxæmia may be present. The whole limb becomes swollen and tense and no pulse can be felt in the extremity, and the hand or foot is cold and numb. The skin is at first grey-white, then mottled grey, green, yellow, purple, and finally black. The infection commences in the neighbourhood of a septic wound, often associated with a septic, compound, comminuted fracture. The gangrene spreads with great rapidity, the gas diffusing in the cellular tissues, especially beneath the skin and along the course of the great vessels. A crackling sensation can be obtained upon palpation above the actually gangrenous area of the limb, the subcutaneous, gaseous cellulitis rapidly spreading to the abdomen or chest. The patient may die of toxæmia before the limb has actually become gangrenous, or even before the gangrenous areas have appeared.

FIG. 2.



Gas gangrene of foot *en masse*. The dark shading on dorsum and inner side of foot shows the dead gangrenous area in the region of entrance wound, while around the exit wound in heel the same is represented. The bullæ are seen just below the ankle-joint, while the lighter shading extending up the leg marks an area of acute congestion.

Illustrative case of gangrene of limb.—Private —— was admitted to a base hospital suffering from a gunshot wound of the left arm. The wound was of the explosive type, probably inflicted at close range. The entrance wound was small; the exit wound, over 4 inches in diameter, was lacerated. There was a severely comminuted fracture of the humerus with great destruction of bone, and spicules of bone protruded from the ragged sloughing wound. A foul-smelling, dirty-grey coloured discharge containing bubbles of gas exuded from the wounds. Around the wound for several inches the tissues were black and gangrenous, the whole of the limb was intensely swollen, massive gangrene extended up to the axilla, the skin on the inner side being of a mottled green. Above the gangrenous area, extending into the axilla and chest on either side and on to the shoulder above, crackling could be felt on pressure. The outer arm was mottled greyish-brown up to within 3 inches of the acromion. The forearm and hand were swollen with tense œdema, mottled greyish-green, cold, and pulseless. The patient's condition was very unfavourable; the pulse was small and running, the temperature was 100° F., the tongue was dry and furred, and the face drawn and anxious. Open ether was administered, preceded by atropine gr. 1/100 and morphia gr. ¼. An intravenous saline injection was begun before the operation. The subcutaneous tissue above the gangrenous area was infiltrated with a 10-volume solution of peroxide of hydrogen. A circular incision was made on a level with the lower margin of the axilla on the inner side and about 3 inches below the acromion process on the outer side, the incision passing through tissue infected with gaseous cellulitis. The circular incision was carried right down to the bone, whilst the subclavian artery was compressed. After raising the deltoid, the humerus was disarticulated at the shoulder. The wound was left open and dressed with saline solution; no sutures were used. The patient suffered severely from shock after the operation. Rectal injections

of saline were given during the night. After the first 48 hours' extreme prostration the patient's condition improved. Continuous saline irrigation was instituted, the wound being dressed only with a layer of gauze. A crescentic-shaped area of tissue which formed the outer flap became coal-black in colour. This piece of tissue demarcated immediately below the acromion and separated eight days later. The wound granulated and rapidly became healthy. It is possible that the sloughing of the flap was due to the infiltration with hydrogen peroxide. This has been omitted in more recent cases with equally good results. The shock would have been less in all probability had the amputation area been infiltrated with local anæsthetic solution.

6. *Metastatic Gaseous Gangrene.*

The above condition has been observed. The gas infection occurs at a part distant from the wound. This exceedingly rare form of infection is presumably a blood infection.

Prevention and Treatment.

The means of preventing gas gangrene will be gathered from its causation. An early cleansing and drainage operation and the removal of missiles, searching examination for concealed septic pieces of clothing, and the efficient drainage of wounds are the primary means of its prevention. The enlargement of apparently clean wounds in cases of fracture of large pipe-bones is advisable where there is any sign of tension and swelling. The interference with the circulation will be obviated by avoiding the use of tourniquets and tight bandages and by efficient splinting which corrects the deformity of fractures. The use of strong antiseptics is to be deprecated, and weak antiseptics will have no effect upon the resistant organisms.

The treatment of gas gangrene is dependent upon two principles. First, the drainage of subcutaneous tissue by means of free incisions, in order that the products of inflammation may escape and the spread of infection to the deeper parts may be prevented. The forms of gangrene limited to the cellular tissues will usually react well to this treatment. Secondly, the excision of all necrotic tissue. By excision of all necrotic tissue is meant that, irrespective of anatomical consideration, the necrotic area must be completely excised, and, in the more severe cases, amputation is the only possible mode of effecting complete excision.

When, in the presence of compound fracture, gas is found to be issuing from the wound and the skin is becoming grey and mottled and the hand or foot is cold and numb, amputation should be performed without delay, as it is of the utmost importance to amputate before the patient is dying of toxæmia. The disease is an extremely fatal one in any case, and calls for recognition and amputation at an early stage. The only form of amputation which can be considered is a direct circular amputation. The amputation should be performed above the infected tissue if possible. Some cases have recovered in which this has not been possible, the gaseous cellulitis having already spread to the trunk. Extension of gas to the trunk does not negative amputation. Amputation should, in such cases, be performed through the gas-infiltrated tissues, and the remaining infected tissues treated by free incisions. A tourniquet is applied, and in order to obviate shock as much as possible a circular infiltration of all the tissues is made around the whole circumference of the limb with novocaine adrenalin solution.

Several methods of combating the shock of an amputation are available, and, since the amputation for gaseous gangrene has to be performed when the patient is in a very toxic condition and very subject to shock, it is essential that one of them be employed. Infiltration of the cauda equina and sacral nerves by introducing 20 c.c. of novocaine solution slowly into the sacral canal through the terminal foramen, the horns of the last piece of the sacrum being the guide to the aperture, is a good method and strongly advocated by some surgeons. Blocking the main nerve trunks by injecting them with local anæsthetic solution is a well-known method. Spinal anæsthesia is perhaps the best method. I have found the local infiltration of the tissues to be divided, with special care in injecting the great nerve trunks, a most satisfactory method. No local ill effects or gangrene have followed the infiltration. Saline solution is usually given into a vein during the operation. All the tissues are divided at the level to which the skin retracts after the circular skin incision has been made. No sutures are inserted by this method and free drainage is obtained. The wound is dressed with hypertonic saline solution, applied on gauze. After the first few hours constant irrigation is applied to the gauze from an irrigator.

CARDIAC SYMPTOMS FOLLOWING DYSENTERY AMONG SOLDIERS.

BY E. B. GUNSON, M.D. EDIN., M.R.C.P. LOND.,
CAPTAIN, R.A.M.C., ATTACHED HAMPSTEAD MILITARY HOSPITAL.

THE present paper is based upon notes of 65 consecutive cases of dysentery admitted to the 19th General Hospital, Alexandria, from Gallipoli in October, 1915. The cases were typical of several hundred admitted to the hospital over a period of several months.

Severity and nature of the disease.—Practically all the cases were examples of severe infection; all gave a history of the presence of blood in the stools persisting for several days, the blood still being present on admission in a large proportion of the patients. No bacteriological examination of the stools was carried out, but on clinical grounds 75 per cent. were judged to be amœbic, the remainder bacillary in type.

Past history.—There was a history of rheumatic fever in 6 per cent.

Control of the patients.—After admission the worst cases, some of whom were unable to walk or stand owing to extreme exhaustion, were kept in bed entirely. The remainder, including some patients who were still passing blood, often had perforce to rise and walk to the lavatory, a distance of 20 yards from the ward. This necessitated rising, in some cases, as often as 30 times during the first 24 hours after admission, and the exertion called for in patients still profoundly weak must be regarded as an important factor in increasing the effect of the disease upon the heart. Even more important, probably, in this connexion is the fact that the majority of the patients continued in the trenches for many days after the onset of dysentery; they often reported sick only when they were completely exhausted.

Drugs.—All the patients received two courses of subcutaneous injections of emetin, in half-grain doses, twice a day for four days. In the severe bacillary cases antidysenteric serum was used. Hæmorrhage from the bowel, diarrhœa, and pain were treated symptomatically.

Circulatory System.

The symptoms and physical signs varied with the severity of the disease.

A. *Fatal cases.*—There were three fatal cases in the present series, but many others were observed. The circulatory disturbance was profound. The patient was pale. The extremities were cold and clammy. The pulse was small and feeble, at times imperceptible at the wrist with a rate of about 100 per minute. Premature contractions (extrasystoles) were occasionally met with. Cardiac dilatation followed the extreme enfeeblement of the pulse within 24 or 48 hours in rapidly fatal cases and was accompanied by marked venous congestion, especially of the head and neck. In less rapid cases the cardiac dilatation and enfeeblement were delayed for several days after the peripheral circulation had first failed, as there were not infrequently marked remissions in the peripheral failure of which the state of the pulse and the cold, clammy extremities were evidence. There was usually slight enlargement of the liver. The condition of the patients presented a striking resemblance to that met with in toxic cases of diphtheria. The primary change was apparently a vaso-motor paralysis followed by cardiac dilatation and enfeeblement of heart sounds.

B. *Non-fatal cases.*—This group is of special interest, as in not a few cases of so-called "soldier's heart" the onset of symptoms dates definitely from an attack of dysentery.

1. *Acute stage.*—In some cases a condition approximating to that described above was met with, and persisted for several days. In other cases the pulse remained of good strength and no signs of circulatory failure occurred.

2. *Convalescent stage.*—In practically all cases the symptoms of general weakness and exhaustion met with during convalescence from any severe infectious disease, when patients are first allowed up, were present. However, unlike many other diseases, convalescence from dysentery is associated in a number of cases with persistent symptoms of circulatory inefficiency, such as a sense of exhaustion, dyspnœa, palpitation, and giddiness after very moderate exertion, which lasts for several weeks and in some cases for several months.

(*a*) *Patients with mild and transitory symptoms.*—In about half the cases it was found that even when the blood had disappeared from the stools, and the temperature had returned to normal, the exertion of walking to the lavatory was accompanied by a sense of exhaustion, slight dyspnœa, and palpitation. The symptoms were mild, persisted for a few days only, and were unaccompanied by any sign of cardiac inefficiency.

(*b*) *Patients with persistent symptoms.*—Eleven cases of the present series (17 per cent.) presented persistent symptoms of cardiac inefficiency for a long period. The symptoms were still present on the patients' discharge either to England or to convalescent hospitals in Egypt, although on an average 17 days had elapsed since blood had disappeared from the stools and the evening temperature was no longer raised. There was no history of rheumatic fever in any of these cases.

Pulse.—The pulse was of full volume and regular. The average rate, at rest, was 95 per minute.

Cardiac dullness.—The area of cardiac dullness was appreciably increased to percussion in all these patients, transverse cardiac dullness measuring 15 cm. and over. The average for patients who presented no symptoms was less than 13 cm. In addition there was usually an increased area of præcordial pulsation, and in three cases the apex beat was in the sixth space.

Auscultation.—The heart sounds were usually sharp and clear. In one or two cases the first sound at the apex was muffled and toneless. A systolic murmur was present in two cases. The liver and spleen were not appreciably enlarged.

Symptoms.—Dyspnœa.—Six patients complained of dyspnœa on walking 30 yards on the level, the remainder developed dyspnœa whenever they climbed a short flight of stairs.

In addition to dyspnœa, all complained of one or more of the following symptoms while walking on the level: Præcordial pain, 4 patients; vertigo, 5; palpitation, 2; and sense of exhaustion, 2. The exertion of returning by a ramp, from the dining hall on the ground floor to their ward on the second floor, produced such marked symptoms that none of these patients was able to attend the dining hall up to the day of his discharge to England as a convalescent.

Special Treatment.

The only drug found to benefit the extreme cardiac weakness met with in the severe cases was adrenalin, and this drug was given in doses of from 5 to 10 minims, every four hours, subcutaneously. The immediate effect was practically always to increase the volume and force of the pulse, and to lessen the degree of pallor or cyanosis for 10 to 15 minutes, while a feeling of well-being was induced which often lasted for one hour. In collapsed cases subcutaneous saline injections were of temporary benefit.

Summary and Remarks.

1. In a series of 65 cases of dysentery 3 fatal cases all presented signs of considerable circulatory embarrassment. The pulse became extremely feeble and at times was imperceptible at the wrist. The extremities were cold and clammy. In the terminal stages cardiac dilatation occurred and was associated with extreme cyanosis, particularly of the face, head, and neck. Temporary relief of symptoms was afforded by adrenalin.

2. Of the patients who recovered 17 per cent. presented symptoms of circulatory inefficiency, persisting into the third week of convalescence, when the patients were transferred to England. Dyspnœa, palpitation, præcordial pain, vertigo, and a sense of exhaustion were the chief complaints. The exhaustion met with in the severe cases was greater than the muscular atrophy and weakness seemed to justify, though there was no evidence pointing to organic disease of the central nervous system.

3. The high incidence of persistent cardiac symptoms is attributed mainly to the fact that the majority of the patients continued on duty in the trenches until completely exhausted; another factor was the exertion of walking to the lavatory, necessary even during the early stages of the disease, owing to the exigencies of active service.

4. Cardiac symptoms during convalescence from dysentery are of importance in relation to soldier's heart, as dysentery unquestionably contributes a certain number of cases to this group.

5. After a severe attack of dysentery adequate rest in bed should be assured to obviate consequent cardiac derangement.

THE RADICAL TREATMENT OF GASTRIC ULCER.

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FOR ulcer of the stomach gastro-jejunostomy has come, had its day, and I hope will soon depart with its trail of people who have had bilious vomiting added to their previous misery. That gastro-jejunostomy is marvellous in its effect upon pyloric stenosis from a healed ulcer, or congenital hypertrophic stenosis, is of course true, but in these cases one is dealing with mechanical conditions and not active ulceration. Also it is perfectly true that some cases of gastric ulcer do get well after an anastomosis, but how frequent it is to see some unimproved or relapsing after a few months. The very worst cases of all—those in which the ulcer is embedded in, and excavating, the pancreas or some neighbouring organ—I assert are not in the least improved. It is of no use to send a patient out of hospital free of pain, for the rest in bed will procure that, but the patient must be seen at intervals and remain free from pain to speak of cure.

Gastro-jejunostomy has fallen into disrepute for several reasons. 1. Because it frequently fails to relieve the symptoms. 2. Because it is sometimes performed upon a pre-operative diagnosis of ulcer, when the real cause of the symptoms lies elsewhere, as, for instance, in a diseased appendix. 3. Because it may add to the patient's former troubles bilious vomiting or jejunal ulcer. These conclusions have been gradually enforced upon thinking surgeons, and I am sure that gastro-jejunostomy for the cure of gastric ulcer will be entirely given up.

Sir John Bland-Sutton in his Hunterian lecture, "Ulcers New and Old,"[1] has shown that the only certain way of curing duodenal ulcer is by pylorectomy with restoration of the continuity between the stomach and duodenum if possible. For the past six years I have performed excision of simple gastric ulcers in all cases with but few exceptions. The exceptions have been where the ulcer involved surrounding structures, and it seemed the wiser plan to give the patient a chance with the slighter operation of gastro-jejunostomy rather than submit him or her to the more formidable operation of excision of the ulcer. But it was in just these cases that absolutely no relief was obtained, and therefore something further had to be attempted.

Since August, 1914, when I adopted a method which, so far as I know, is original, I have not met with any case of simple gastric ulcer in which the *ostrich device* of gastro-jejunostomy has had to be resorted to. In most cases the gastric ulcer is situated on the lesser curvature or posterior wall. Sometimes the ulcer spreads down both the anterior and posterior walls. In the ordinary case after the gastro-hepatic omentum has been divided, the coronary artery ligatured on either side of the base of the ulcer, it is perfectly easy to remove a small wedge surrounding it, and then unite the cut margins of the stomach by two rows of stitches. The nearer the ulcer is to the cardiac end the greater are the difficulties, but even then it is merely a question of sufficient retraction and exposure. If the ulcer is in the neighbourhood of the pylorus it is better to perform pylorectomy and then unite the stomach to the duodenum. If the lesion is a saddle-shaped ulcer—that is, one perched on the lesser curvature and extending down both the anterior and posterior walls—or, as in one of my cases, an ulcer 2 inches wide completely encircling the stomach at its middle, I prefer to remove that segment of the stomach and then unite the cardiac and pyloric remains. This, of course, lessens the size of the stomach, but as a stomach is a convenience and not a necessity, this only ensures that the patient shall not overeat in the future.

But now I come to the real problem, and that is the case in which the ulcer is fixed to surrounding structures in such a way that it would seem too dangerous an operation to attempt to remove it. In August, 1914, I had to deal with such a case in which a year previously I had performed gastro-jejunostomy, as I considered it unfair to submit the

[1] THE LANCET, Feb. 19th, 1916, p. 387.

patient to so big a risk as excision, for I had found that the ulcer, which was one of the saddle variety, deeply excavated the pancreas with a large area of surrounding infiltration. (Figs. 1 and 2.) However, as the patient had obtained no relief and her life was a constant misery, I agreed to attempt removal. After a thorough exposure

FIG. 1.

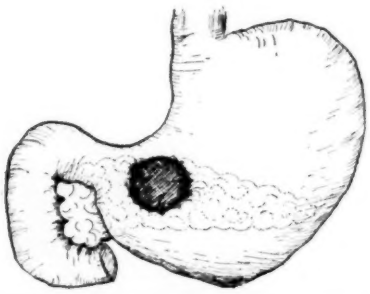


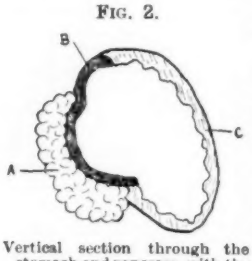
Diagram representing the stomach and pancreas seen through it, with the ulcer shaded black where it excavates the pancreas.

of the infiltrated part and an attempt at dissecting it out, it looked as if I should endanger the portal vein or the common bile-duct, and I did not care to face that; so then it struck me that I might detach the stomach from the ulcer by cutting around its margin, sew up the opening in the stomach, and then deal with the ulcer by scraping and cutting away its base in an endeavour to leave a sterile raw surface, and not worrying whether it should become adherent to the stomach or not. (Fig. 3.) As it has turned out, though it is practically certain that the pancreas is adherent to the posterior wall of her stomach, she has had no troubles since the operation. I have seen her recently looking a picture of health. I have put this operation into practice in two cases since with equally good results.

I have had no mortality from the cases of excision of gastric ulcers, though it involves a bigger operation than an ordinary anastomosis, and the results have been good in all. This contrasts well with gastro-jejunostomy which frequently fails to relieve the symptoms.

Gastro-jejunostomy performed upon a pre-operative diagnosis was more frequently done in the early days of the operation, and may still be done by people new to gastric surgery. Unless there is a definite ulcer whose infiltrated margin can be felt, I do not consider there is any justification for assuming its existence, and it is in just such cases, if gastro-jejunostomy be performed, that patients have bilious vomiting and possibly a jejunal ulcer added to former troubles. I have had many such cases in which the true cause of the symptoms was a diseased appendix, although all the symptoms had been gastric. Some of the patients have had hæmatemesis more than once, but the proof of the cause of their symptoms rests in their immediate restoration to health when the diseased appendix has been removed.

FIG. 2.



Vertical section through the stomach and pancreas, with the ulcer shaded black. A, Pancreas; B, Gastro-hepatic omentum; C, Stomach.

It has been difficult to explain the rationale of gastro-jejunostomy for the cure of gastric ulcer. Following upon the success of this operation for pyloric stenosis, it was assumed that it acted as a drainage operation, so preventing the food from irritating the surface of the ulcer. This had to be given up when X ray evidence showed that food still passed to a considerable extent through the duodenum, and that instead of the stomach emptying more quickly it emptied more slowly. Then followed the explanation that the early entry of alkaline duodenal juice into the stomach through the new opening, thus diminishing the hyperacidity, was the true cause of the occasional good effects. This left it open to Dr. Hertz's query, that if this were the whole truth, then why should not regular doses of sodium bicarbonate have an equally good effect? The answer to that was unsatisfactory.

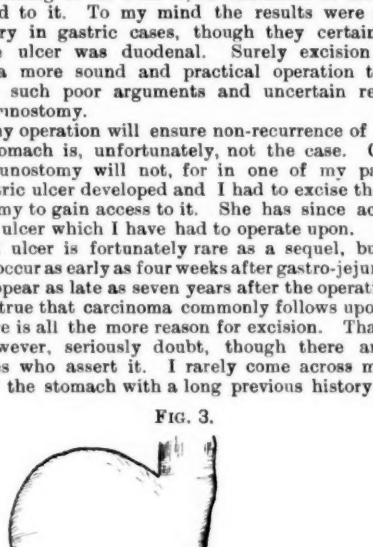
Then another line was chosen, not to explain the rationale, but to improve the results, and arguing that as the cases of pyloric stenosis which had been submitted to gastro-jejunostomy were invariably satisfactory, then the stenosis must have something to do with it, so exclusion of the pylorus was added to it. To my mind the results were no more satisfactory in gastric cases, though they certainly were when the ulcer was duodenal. Surely excision of the ulcer is a more sound and practical operation than one based on such poor arguments and uncertain results as gastro-jejunostomy.

That any operation will ensure non-recurrence of an ulcer in the stomach is, unfortunately, not the case. Certainly gastro-jejunostomy will not, for in one of my patients a fresh gastric ulcer developed and I had to excise the gastro-jejunostomy to gain access to it. She has since acquired a duodenal ulcer which I have had to operate upon.

Jejunal ulcer is fortunately rare as a sequel, but I have known it occur as early as four weeks after gastro-jejunostomy. It may appear as late as seven years after the operation.

If it is true that carcinoma commonly follows upon gastric ulcer there is all the more reason for excision. That this is so I, however, seriously doubt, though there are many authorities who assert it. I rarely come across malignant ulcers of the stomach with a long previous history pointing to chronic simple ulceration. If chronic ulcer of the leg is to be used as an analogy, I think it only proves how rare it is for a simple ulcer to become malignant. In fact, the only chronic ulcer I know which frequently becomes malignant is that which occurs in chronic superficial glossitis, which is not on a par with other chronic simple ulcers.

FIG. 3.



Posterior view of the stomach after it has been detached from the ulcer, showing the latter on the pancreas.

Summary.—That gastro-jejunostomy is unsatisfactory as a method of treatment for gastric ulcer, and may even add to the miseries of the patient. That all gastric ulcers can be excised except those which are adherent to important structures in the neighbourhood, and that gastro-jejunostomy is useless for these. When the ulcer is adherent to important structures the stomach can be detached from the base of the ulcer, the opening closed, and the base of the ulcer, after being scraped and being now excluded from the stomach, will give no further trouble.

Wimpole-street, W.

MEDICINAL AND ECONOMIC PLANTS.—The value in education of a study of these plants has been recognised for some time by Dr. Jamieson Hurry, of "Westfield," Reading. A series of medicinal and economic plants have for several years past been grown in the garden and conservatories at "Westfield" in order to enable those interested to become acquainted with their appearance. Amongst the plants are tea, coffee, bananas, olives, pepper, cinnamon, cotton, flax, hemp, arrowroot, cinchona, sugar, papyrus, belladonna, and stramonium. By the side of the plants are arranged specimens of the economic products derived from them and used either for food, for clothing, or for medicine. During each summer the garden and conservatories are thrown open at certain times to any persons who care to avail themselves of the opportunity for study. Demonstrations of the more important exhibits are given at intervals by Dr. Hurry and his assistants.

THE TREATMENT OF HÆMORRHOIDS BY INTERSTITIAL INJECTION.

BY T. BIRD, M.R.C.S., M.A. OXON.,

LATE ANÆSTHETIST TO KING EDWARD VII. HOSPITAL, AND CONSULTING ANÆSTHETIST TO GUY'S HOSPITAL AND TO THE EAST LONDON HOSPITAL FOR CHILDREN.

ALTHOUGH this treatment has a history of many years, I do not think it has received the attention that its success deserves. It first came to my notice some eight or ten years ago through my old student friend and colleague, the late Sir James Goodhart. Later, requiring some relief from hæmorrhoidal annoyance which was becoming a constant irritation, I chose this treatment for the following reasons: The prospect of complete relief in eight or nine visits, each taking a quarter of an hour; very slight pain of no duration; and at the same time no interference with my ordinary life and work. The only change that I noticed in the parts treated was an appreciable, but very slight, warmth. It is now some years ago, and I am still perfectly comfortable.

I should like to state that this article was written prior to the appearance in THE LANCET of the articles on the same subject by Mr. Arthur S. Morley[1] and Mr. F. Swinford Edwards.[2] I have thought it better to leave it as written, for in matters of detail there must necessarily enter the personal equation.

Some critics have suggested that there is a likelihood of return. This has not occurred in my own case or work, but if a part of the pile be left untreated it is likely to increase, and I think this must have given rise to the idea of recurrence. There can be no return in the part destroyed, and in this opinion I am confirmed by Mr. Dudley D'A. Wright, who kindly operated upon me, and whose brochure on the subject anyone who means to take up the work should certainly procure.

Pure carbolic acid as an injection into pile tissue was first used about half a century ago in the United States of America, but through misuse the practice fell into abeyance. Some 30 years ago it was resumed in a mitigated form by Dr. Hoyt, of New York. The deviations from his treatment in many hands seem to have caused disappointment, perhaps through seeking more rapid or more complete success.

Sir James Goodhart[3] speaks very strongly on the operations in vogue, and as I can confirm his remarks, both by my own practice and that of over 50 years of anæsthetic work with first-class surgeons, I cannot do better than quote him, with the remark that the forecast held out by the surgeon is not always realised by the patient:—

> Now, why should I, thus out of order, put in a plea for the more frequent use of injection? I do so because I happen to have seen a good deal of the partial and poor successes of the common operations, whereas the results of injection have seemed to me to be uniformly good.
>
> Some years ago I became very dissatisfied with the results of ligature. More recently I have known of poor results by the Whitehead operation as well—first, because the patient was laid up for several weeks; secondly, because the shock of the operation may be very detrimental; thirdly, because even within my own small experience I have known of cases of serious local trouble afterwards invaliding the patient for a long time; fourthly, I have many times found a definite membranous stricture at the anus where an operation has been performed; and, lastly, so many have told me that there has remained, more or less permanently after operation, a state of discomfort in one way or another that was by no means pleasant.

Patients unfortunately do not seek relief until an acute "attack of piles" occurs. This it is as well to palliate in the ordinary way until the inflammation or strangulation is relieved, otherwise the treatment may be painful. The best time for treatment is while the piles are giving no trouble. An acutely inflamed external or strangulated pile may with relief be emptied of blood and then have three or four piqûres; when introduced the solution stops the bleeding and often relieves the pain immediately.

Hoyt's treatment requires no private home or hospital for a fortnight or three weeks, no anæsthetic, no keeping to bed, no nurse, and no subsequent pain. There is no stretching of the sphincter. It is better to avoid spirits, highly seasoned dishes, salt, and coffee; otherwise life may go on as usual. In many cases relief is almost immediate. One patient of mine, a clergyman, whose life was a misery, said on the third day, after the first piqûre, "I have not had such a two days for six years." Subsequently in a note he thanked me for his "new life." Riding men, rowing men (I have seen all the seats in a college eight stained with blood), men from the trenches, and drinkers of Gallipoli water seem to be the chief sufferers amongst otherwise healthy men.

It is 50 years ago since I first had a hard external pile when captain and stroke of my college eight. I did not want to leave the boat, and wrote to Mr. James Long, professor of surgery at Liverpool, to whom I was still indentured, asking what I could do under the circumstances. The reply was worthy of a pupil of Abernethy: "Row on it until it bursts." I did, and I hope my crew never noticed the first ten minutes' rowing each day, until the parts got warm. The acutely expected event came off, and we made four bumps.

The solution recommended and used by Hoyt consists of equal parts of hazeline and distilled water, to which is added 10 per cent. of pure carbolic acid; the whole of the acid is not dissolved unless warmed; the bottle must be shaken when the solution becomes turbid from the finely disseminated acid, and is then ready for use. It should not be allowed to run on mucous membrane or skin, as in both cases it gives rise to soreness. I have had no trouble through carbolic acid absorption, though I have injected as much as 15 minims at one sitting.

It is not only for hæmorrhoids that the treatment is useful (in my own case there was a polypus in addition to three hæmorrhoids), but also in cases of prolapsus ani. I can look back upon some cases in old people that were treated by astringents which I should now treat in this way rather than with cautery or by incision—the uncomfortable alternatives.

What are the disadvantages of the treatment? There are certainly two: the number of visits, and the passage of the anal speculum. The speculum I have found to be best has been Kelly's sphincteroscope, both for the first examination and the ensuing treatment, but it should always be well warmed before insertion and well lubricated either with vaseline or lubifax, which is more easily washed off with water than vaseline.

The Holborn Surgical Instrument Company have made me a self-retaining speculum, as Kelly's requires one hand to retain it during the injection by the other. The illustration shows the bulbous extremity which passing through the sphincter retains it in position. The windows vary, the one illustrated is a small speculum for ladies, and allows one to look for fissure or fistula before introducing Kelly's instrument. Another has the window shaped to prevent the mucous membrane in front interfering with the view of the hæmorrhoid.

It is better not to inject a pile near the junction of the mucous membrane and the skin or external to that line before the inner or upper portions have been treated.

External piles (inflamed) should be allowed to subside under appropriate treatment before injection and the patient should be advised against taking wine and spirits and highly seasoned dishes and should be given medicine to produce soft evacuations. A platino-iridium needle not too fine and about an inch and a quarter long is perhaps the best, though I use a short, stiff needle on a prolongation that fits on to the "Record" syringe, as this gives a clear view of the length of the speculum. Care should be taken to keep the needle in the long axis of the bowel and a slight side-to-side motion as the plunger is pressed on tears the interior of the pile, and if the needle is kept in for a few seconds there is seldom any bleeding. After an injection or two the pile surface becomes hard, so that future injections should be made between the old scars until the pile is completely treated. An ordinary pile condition requires eight or ten piqûres; a commencing pile only one or two. A soft, freshly-formed hæmorrhoid may be injected with from six to ten minims; these are the ones that bleed most, but there is no occasion to apply any styptic, the carbolic acid and the hazeline being sufficient to control bleeding. At the first visit I now give preference to injections of not more than three minims superficially to

[1] THE LANCET, March 18th, 1916.
THE LANCET, April 15th, 1916. [3] Practitioner, December, 1914.

different parts of the surface of the pile; this makes subsequent injections almost painless, and prevents the swelling caused by larger injections made more deeply.

It should be remembered that the expediency of the treatment is that it should cause no inconvenience beyond the number of visits to the operator. I like to operate with only two days between, having found that cases so treated do better than do those with long intervals and larger injections. I have myself taken a run in less than five minutes after a piqûre, and Mr. Charles Higgens, my colleague at Guy's Hospital, tells me that he played squash rackets on the same day that I had operated and had hunted on the next.

In exceptional cases I have injected external piles (inflamed), but this is a painful operation, and it is best to treat as above, or at least to empty them of blood first and return them if possible after injection.

Conduit-street, W.

AN UNUSUAL CASE OF ALBUMINURIA.

BY O. LEYTON, M.D., D.SC. LOND., F.R.C.P. LOND.,
PHYSICIAN TO THE LONDON HOSPITAL.

NINE years ago a man aged 39 consulted me, giving the following history. Eighteen months previously, whilst he had been dining with some friends, the conversation had turned to a discussion of the age to which each individual at the table was likely to attain. One of them had said to him, "in chaff," that he could not expect to live very long. This had sent him, in spite of his feeling quite well, to the house of a well-known consultant, who now is no longer with us. This physician had found that the patient was passing very large quantities of albumin in his urine, which had led him to pronounce a very unfavourable prognosis; in short, the patient stated that he had been told to go home and put his affairs in order. During the intervening 18 months he had experienced no discomfort with the exception of slight œdema of the legs, but he had noted that his urine was never clear.

The patient appeared to me to be healthy and in robust health, but on heating a specimen of the urine I found that it coagulated completely, so that upon inverting the test-tube no fluid ran out. Granular casts and red blood cells were found in the urine on one occasion only. The physical examination showed me that his apex beat was in the fifth space half an inch internal to the mid-clavicular line; his heart was beating regularly, whilst there was no murmur, and the ratio of the first sound at the apex to the second sound at the base was 60/30. (I have no record as to whether this was measured with an Oertel or a Bock stethoscope.) The aortic second sound was not accentuated. The systolic blood pressure was 125 mm. Hg. That this blood pressure was not due to any myocardial degeneration seemed quite certain from the fact that the ratio of the two sounds was normal. There was not any evidence of hardening of the arteries.

The next question which arose was whether the kidneys were acting efficiently. In order to determine this I estimated his excretory quotient. Much doubt has been thrown upon the value of this method, but in my experience of several hundred cases it has invariably assisted in prognosis, so that I cannot help thinking that when observers have found that it has led them astray it has been due to the omission of some essential details in the process, and therefore I will take this opportunity of recording the essential points. 1. The patient must be on a normal diet, not on a diet which is considered suitable for a renal case. The diet must contain the average quantity of sodium chloride. 2. The patient must not have had anything to drink during four hours before the specimens are taken. 3. The specimens of urine and blood must coincide. In order to do this the patient must be made to empty his bladder; ten minutes later a specimen of blood should be taken; ten minutes after this a specimen of urine, which will then represent the average secretion whilst blood similar to that taken was circulating through the kidneys. The electric-conductivities of the serum and the urine are compared; in normal cases the conductivity of the urine is double that of the serum. The apparatus required to carry out this estimation is extremely simple. It is only the electrodes which are of special design, and they are easy to make (the details of which I described in THE LANCET of May 18th, 1912, p. 1339).

In the case which I am recording the excretory quotient was 2—that is to say, the conductivity of the urine was double that of the serum, which showed that the patient was excreting electrolytes normally. He was given methylene blue (nine years ago phenolsulphonephthalein was not being used). The excretion of the methylene blue was completed in the average time. The urine contained coli bacilli; but the patient had no frequency of micturition or other symptoms of cystitis. The nature of the protein passed was examined in detail, and the greater part of it was found to be serum albumin, although small quantities of serum globulin were present.

The next question which arose was how was the disease produced—a disease that allowed serum albumin to pass through the kidneys but did not interfere with their excretory efficiency in any known way. The patient had never suffered from scarlet fever or any severe infection. During the last few years he had been in the habit of taking urotropine, and being a very busy man and forced to travel a great deal, he had had tablets made, each containing 10 grains, and used to take up to six a day, whenever he felt inclined, without having made the habit of taking water after the tablets. I therefore suggested that in all probability this drug had been excreted in too concentrated a solution as formic aldehyde, which had tanned the kidneys and led to their leaking serum albumin. The probability of being able to sterilise his urine seemed remote.

My advice to the patient was to lead a healthy life, and to forget that his urine contained albumin, because, in my opinion, it would not shorten his life or cause any symptoms, whilst I could not conceive of any method of treatment which would renew the glomeruli of his kidneys, or even greatly diminish the amount of work thrown upon them.

In April, 1916, a practitioner asked me to meet him and a surgeon in consultation over a case which seemed to him somewhat out of the common. On being told the name of the patient I learnt to my great pleasure that I was going to see the albuminuric case I had investigated in 1907. I heard from the patient that after leaving me in 1907 he had consulted a bacteriologist, who had at first been sanguine. But after inoculations extending over many months without any improvement the vaccinator had resigned the case. The patient had consulted many physicians in the interval and none had been able to make further suggestions as to the origin of his disease. The reason for my assistance having been sought was to decide whether the patient was fit for an operation which seemed desirable although not essential. The urine still contained a large quantity of protein but no casts. The examination of the heart showed that there had not been any increase in its size, the apex beat being in the identical position to that of nine years ago. The aortic second sound was not accentuated, but the ratio of the intensity of the first sound at the apex to that of the second sound at the base had altered from 60/30 to 50/50, which I believed proved that some myocardial alteration had taken place. The blood pressure was 120 mm. Hg. The excretory quotient was 2·1. The excretion of 6 mg. phenolsulphonephthalein was completed in six hours, and more than 90 per cent. appeared in the urine. Upon examination of the retinæ it was found that the arteries did not in any way diminish the lumen of the veins which they crossed, and therefore there was no evidence of arterio-sclerosis, whilst the discs and rest of the retinæ did not present any abnormal appearance. The walls of the radial vessels were not palpable.

The alteration in the relative loudness of the first and second sounds of the heart is of interest, and I offer as a tentative explanation that the myocardial alteration was brought about by the toxin made by the coli bacilli in the urine.

The question of absorption of toxins from the bladder is debatable, but many hold the view that in bacilluria the microbes invade the mucous membrane.

The case is of interest in illustrating that kidneys may excrete perfectly for many years whilst the urine contains very large quantities of protein.

PS.—The operation has been carried out with complete success.

Portland-place, W.

Reviews and Notices of Books.

Abnormal Children (Nervous, Mischievous, Precocious, and Backward).

By BERNARD HOLLANDER, M.D. With 12 page illustrations. London: Kegan Paul, Trench, Trübner, and Co., Limited. 1916. Pp. 219. Price 3*s.* 6*d.* net.

SEVERAL works have recently appeared with regard to defective and other exceptional children, but most of these refer more especially to cases that can be brought within the purview either of the Mental Deficiency Act or of Acts regulating the education of defectives. Dr. Hollander's book, however, seems to be addressed to a less technical but wider circle of readers, stated on the title-page to be "parents, teachers, and medical officers of schools." Its style is consequently more popular than medical, and its chapters roam over a wide range of the varying aspects of mental abnormality in childhood. Thus after a consideration of the causes of abnormality, amongst which the first place is rightly given to heredity, we are led on to rapid descriptions of idiocy, imbecility, and feeble-minded children, followed by a chapter on merely backward ones. Then comes a dissertation on character defects in children and on moral weak-mindedness. Nervous and precocious children and the nervous disorders of childhood follow, and insanity in childhood and adolescence is dealt with at some length. Head abnormalities are discussed in relation to their significance, and in the last two chapters we find judicious practical hints as to the training of boys and girls in accordance with their aptitudes and in view of their pursuits in after-life, and as to the sort of moral education best fitted to various types and temperaments.

Whilst not noticing much that is novel in the early part of the book—though Dr. Hollander nowhere refers to other authors—we think that a perusal by parents and others in charge of children of his exposition of character defects, and of the risks to be avoided with nervous and precocious children, may be of service, even without acquiescence in his view that psychotherapy by way of suggestion, hypnotic or otherwise, is the cure-all in wayward and morally weak-minded cases. The book is a very readable one for the lay public, is cheap but well got up, and the illustrations are well selected and produced. We notice on p. 29 the statement that "when the (brain) development is permanently arrested at the stage of infancy or *in fœto* (*sic*), the result is *idiocy*." This statement may be more correct, in a general way, than the Latin.

Manual of Vital Function-testing Methods and their Interpretation.

By WILFRED M. BARTON, M.D., Associate Professor of Medicine, Medical Department, Georgetown University, &c. Boston: Richard G. Badger; Toronto: The Copp Clark Company, Limited. Pp. 255. Price $1.50.

THE author claims that the work before us does what no other has attempted, in collecting together the details of practically all recognised functional tests which are scattered throughout medical literature. We believe the claim to be valid and commend both the idea and its execution.

A brief enumeration of the contents of the book will show the amount of labour that must have been devoted to its preparation and the variety of fare offered to the reader. First there are considered the tests of the glycogenic function of the liver, and of these four are described, based on the use of different sugars. The urea function of the liver is next dealt with, the tests involving estimations of the urea eliminated, of the urinary ammonia, of the amino-acids in the urine, and of the residual nitrogen in the blood serum. After this the antitoxic function of the liver is considered, as measured by the excretion of methylene blue and of indican; and after this, again, the activity of the liver is dealt with in its bearing on blood formation and the excretion of bile, the former property being investigated in relation to the coagulability of the blood and to the quantity of lipase which it contains, the latter by estimation of urobilin and its allies and by the rate of excretion of phenol-tetrachlorphthalein in the bile. Some 50 pages are thus occupied by the investigation of the liver. Tests for renal function are better known in that they include ordinary methods of urinary analysis. Nevertheless, there are several other methods of investigation here set forth, involving the estimation of the different urinary constituents, water, pigment, chlorides, and so forth, which are outside ordinary clinical procedure. The content of the blood in respect to nitrogenous waste products is available as a measure of renal activity, while the use of various chemicals which are eliminated by the kidneys as tests of permeability is not often employed in medicine. Three dyes and four drugs are here considered as test substances. The kidneys altogether receive 74 pages of type. Tests for the functional integrity of the pancreas relate to its proteid, fat, and carbohydrate ferments, and also to the internal secretion of the gland by which it is supposed to regulate sugar metabolism. Tests for the functional capacity of the heart again are not often described or employed clinically; yet here we find no less than eight tests for its muscular ability as well as a description of other modern instrumental methods of investigation. Finally, the ductless glands are considered in turn, and we are introduced to the methods which have been devised for estimating the activities of the thyroid gland, the suprarenal bodies, and the hypophysis cerebri. In all cases both the details of the test are given, and a discussion is appended as to the value of the procedure as a criterion of the function with which it deals.

The author often frankly admits the uncertainty so far attained in the investigations set forth, and throughout he is impartial and critical. The book should be of considerable use in all clinical laboratories, and should certainly stimulate research. It is only by a large number of investigations by different observers that a judgment can be formed of the value of a procedure, while the more general employment of functional tests should reveal interesting phenomena in disease conditions which have hitherto escaped clinical observation. The book is of convenient size and weight. It is clearly written, but here and there curiosities of diction may be found, such as "discoloration" for "decoloration," "illy" for "ill," and so forth. Perhaps they are idioms of the American language. We heartily commend the book.

London County Council Annual Report, 1914.

Vol. II.: *Asylums and Mental Deficiency.* London: P. S. King and Son.

THE second volume of the Annual Report of the London County Council, recently published, comprises: (1) the Report of the Asylums and Mental Deficiency Committee, as Visiting Committee for the London County Asylums, for the year 1914–15, made in pursuance of Section 190 of the Lunacy Act, 1890; and (2) the Report of the Council as the Local Authority for the purposes of the Mental Deficiency Act, 1913, made pursuant to No. 28 of the Mental Deficiency Act Provisional Regulations, 1914.

After a few prefatory remarks as to the duties of the Council under each of the Acts referred to, statistics are given as to the various asylums, from which it appears that the aggregate accommodation available at the ten London County asylums was for about 20,000 patients who were paid for by the guardians of unions; in addition, Claybury Hall received 64 males as private patients at moderate fees, and there were 144 other private patients at the Manor Asylum and the Epileptic Colony near Epsom. Asylum admissions, in the aggregate, numbered 3639 during the year, discharges 1845 (1003 notified as "recovered"), and deaths 1841. Horton Asylum was taken over by the Army Council for the treatment of wounded soldiers, and is at present known as the County of London War Hospital, Epsom. The medical superintendent, Dr. J. R. Lord, has been appointed commandant, and the Army Council has expressed its appreciation of the coöperation of the ordinary staff in the military work of this hospital. The lunatic patients have been temporarily drafted to other institutions. The Maudsley Hospital at Denmark Hill, founded by the generosity of Dr. Henry Maudsley for the early treatment of cases of incipient insanity, with a view to preventing such cases becoming so confirmed as to need being sent to

ordinary county asylums, was approaching completion, and it was intended to remove the Council's Pathological Laboratory from Claybury to that establishment. The report of Dr. F. W. Mott, pathologist for the London County Asylums, contains interesting particulars of investigations conducted under his direction during the year. An inquiry as to the incidence of mental deficiency among the offspring of the insane in the London County asylums was continued during the year, and altogether the families of 588 insane patients were investigated. According to the reports received from the education authorities, it resulted that only 15 (i.e., 2 to 3 per cent.) of these had mentally defective children. An investigation was also carried on into the family histories and environment of 60 mentally defective children in London special schools.

Research was conducted by Mr. Mann as to the "diagnosis of syphilis by the serum reaction" in order to estimate the incidence of syphilis in various types of the community and as a means of diagnosis in mental disorders, and a detailed summary of the results obtained is included in the Report of the Royal Commission on Venereal Diseases. "Insanity in relation to the ductless glands and reproductive organs" was made the subject of systematic research by Dr. Kojima (of Tokio), and previously by Dr. Laura Forster. In connexion with hypothyroidism Dr. Mott remarks that this condition is more common than is generally supposed in women at the climacteric period. Dr. F. Sano, superintendent of the Antwerp asylum for acute mental cases up to the time of the German occupation, has since been working in the Claybury laboratory, aided by a grant from the National Health Research Committee, and has been investigating the cerebral mechanism of speech. A number of brains, illustrating anatomical defects caused by various pathological lesions, having been placed at his disposal, he utilised them to make serial sections and drawings, and to correlate as far as possible the ascertained lesions and peculiarities with the clinical symptoms observed during life. Dr. Fisher and Dr. Beach have also collaborated with Dr. Mott in other research work.

There is much of medical interest in the annual reports of the various asylum superintendents for which we recommend that this volume should be consulted—e.g., statistics as to the etiology of insanity and investigations with regard to dysentery and other diseases prevalent in asylums. Everywhere the male staff has been much depleted owing to the war, and it is greatly to the credit of the medical officers that, notwithstanding their enhanced duties, they continue to devote much time and energy to the training of nurses and attendants by lectures and demonstrations in preparation for the examination of the St. John Ambulance and Medico-Psychological Associations.

LIBRARY TABLE.

A Text-book of Nervous Diseases for Students and Practising Physicians. In 30 Lectures. By ROBERT BING, Dozent for Neurology at the University of Basel. Only authorised translation, by CHARLES L. ALLEN, M.D., Los Angeles, California. With 111 illustrations in the text. London: William Heinemann. Pp. 481. Price 21*s.* net.—The original German edition of this book was reviewed in THE LANCET of March 21st, 1914, and it was stated that the originality and suggestiveness of the book would probably be best appreciated by those who already have a fair knowledge of neurology as a whole. The opinion then expressed is confirmed after a consideration of the material in its English guise. The volume is lucid and readable, and bears evidence of the clinical experience and erudition of its author; the "lecture" method of presentation, however, suffers from certain disadvantages. The English version bears very much less evidence of being done by a "hack" translator than has unfortunately been the case with several other American translations that we have had recent occasion to review. The translator knows German and his subject.

The After-treatment of Operations: A Manual for Practitioners and House Surgeons. By P. LOCKHART-MUMMERY, F.R.C.S. Eng., B.A., M.B., B.C. Cantab., Senior Surgeon, St. Mark's Hospital for Cancer, Fistula, and other Diseases of the Rectum. Fourth edition. London: Baillière, Tindall, and Cox. 1916. Pp. x.–275. Price 5*s.* net.—We are pleased to see that another edition of this book has been required, for we hold that in many cases the after-treatment of an operation may be almost as important as the operation itself, and a work like this is well calculated to be of immense value to those in practice, to resident medical officers, and to senior students. The additions to the present edition are many and important, especially the chapter on shock, which has been completely rewritten, in view mainly of Crile's work on the subject. A useful addition is the chapter dealing with gunshot wounds, as many have, during the war, to deal with such wounds who have had little experience previously in this branch of practice.

Studies in Blood Pressure, Physiological and Clinical. By GEORGE OLIVER, M.D. Lond., F.R.C.P. Edited by W. D. HALLIBURTON, M.D. Lond., F.R.S. Third edition. London: H. K. Lewis and Co. 1916. Pp. 240. Price 7*s.* 6*d.* net.—The author's untimely death prevented him from carrying to completion the present edition of his book. The major part of it was entirely rewritten and ready for the printer, and Professor Halliburton took upon himself the task of seeing his friend's book through the press, adding a few footnotes where necessary, and reprinting certain omitted chapters from the 1908 edition, with the help of another old friend, Dr. Alfred Mantle, of Harrogate. This third edition of the late Dr. Oliver's work will be welcomed by all exact clinicians, for to these the measurement of arterial tension has become an everyday practice, which is the best testimony to the value of the author's life work.

POOR-LAW MEDICAL OFFICERS' ASSOCIATION OF ENGLAND AND WALES.—A council meeting was held at 9, Copthall-avenue, E.C., on July 7th, Mr. A. A. Napper being in the chair. The honorary secretary reported that he had been informed that a Poor-law medical officer had been very unjustly treated by his guardians. He is the medical officer to a Poor-law infirmary which has no accommodation for the treatment of serious operations, and when a patient suffering from obstruction of the bowels was brought to him for admission he sent him on to a hospital in the neighbouring city. The friends of the patient were displeased and complained to the guardians, who resolved to pay an outside practitioner a fee of one guinea and deduct it from the salary of their medical officer. The outside practitioner had attended the patient before his admission to the hospital. It can hardly be questioned, said the honorary secretary, that this is quite beyond the legal powers of the guardians, and the matter is now in the hands of the Medical Defence Union.

The council then considered the nomination of officers and members of council for the ensuing year, and decided that all the retiring officers and members of council should be recommended for re-election.

The annual general meeting of the association was held later, when the report of the council for the preceding year and the balance-sheet were put before the meeting and approved. The officers and members of council who had held office during the last year were then nominated for the next year, and Surgeon-General G. J. H. Evatt, C.B., was re-elected President, Dr. Major Greenwood honorary secretary, and Mr. F. Greenwood honorary treasurer. Mr. Withers Green was reappointed auditor.

After the business of the annual meeting had been concluded, the honorary secretary said that he wished to propose a resolution in respect of the action of the Government in reducing the payments for the notifications of infectious diseases from 2*s.* 6*d.* to 1*s.* "Many of our sister societies," he said, "have carried resolutions condemnatory of this action, and the association should follow the example." He then moved the following:—

> That this meeting of the Poor-law medical officers of England and Wales strongly condemns the recent action of the Government in reducing the fees for the notification of infectious diseases; that considering the loyalty of the profession, and the great assistance rendered by it to the Government during the war, the said reduction is excessively mean, and it is earnestly hoped that as soon as the war is over, those bodies representing the medical profession will take all steps in their power to obtain redress for such inequitable treatment.

This resolution was put to the meeting and carried unanimously.

THE LANCET.

LONDON: SATURDAY, JULY 22, 1916.

The Prevention and Treatment of Venereal Diseases: The Intervention of the State.[1]

IN the Final Report of the Royal Commission on Venereal Diseases it was recommended that arrangements should be made without delay for providing adequate facilities for the diagnosis and treatment of all persons in the community affected with venereal disease; and a large part of the financial burden which effective measures must imply should be borne, it was said, by the State. The opinion of the Commission was heartily endorsed both by the medical profession and the public. The evidence which came before the Commission proved beyond doubt that venereal diseases—syphilis, gonorrhœa, and soft chancre being so defined—could be controlled and their incidence on the population reduced within narrow limits by early and efficient treatment, but it also appeared that as yet the best methods of diagnosis and therapy are not available for the population generally, with the consequence that venereal diseases inflict a vast amount of preventable suffering upon the community, culminating in the loss of many lives and in the physical ruin of many citizens. The Commission faced the situation squarely by stating that the organisation of arrangements for adequate laboratory facilities and for skilled free treatment should be put in hand at once, and in order that the measures taken should have a wide result, and should be unfettered by pecuniary trouble, they advised that these should be entrusted to the councils of counties and county boroughs (among which the Common Council of the City of London was included), and that 75 per cent. of the cost of carrying out the proper schemes should be met from Imperial funds. The Government have decided to accept entirely and immediately the advice of the Commission, and Mr. LONG, as President of the Local Government Board, has addressed a circular to the public bodies concerned, asking for their coöperation, explaining the way in which the gigantic work should be carried out, and enclosing the Regulations under which action will be taken. These Regulations have been made under the Health Acts and are issued as an Order of the Board, who have estimated the conditions of the present war as constituting a case of emergency, which absolves the Board from any necessity of consulting the public bodies in the matter before issuing instructions. The counsel of a strong commission, inspired by unimpeachable evidence, has thus received complete endorsement, and all informed persons will applaud the promptitude of the Local Government Board. There is no doubt whatever that the organisation of scientific measures against venereal diseases will lead immediately to a great reduction in the number of cases and a corresponding alleviation of untold misery; and while this belief is so wide-spread that all the local authorities would have given upon their own initiative every encouragement to medical measures undertaken to combat this evil, it is far better that the State, which will find three-quarters of the money required, should from the beginning preside over the campaign.

The Regulations of the Local Government Board, made on July 12th, and issued with the circular, direct that the council of every county and county borough shall, subject to the approval of the Board, make arrangements for enabling any medical practitioner practising in the area of the council to obtain, at the cost of the council, a scientific report on any material which the practitioner may submit from a patient suspected to be suffering from venereal disease. They further provide that these public bodies shall prepare and submit to the Board a scheme which ensures the treatment at hospitals or other institutions of persons suffering from venereal diseases, and under which medical practitioners can be supplied with salvarsan or its substitutes. It will therefore be the duty of the councils to proceed at once with the consideration of the steps which they should take in these directions, and with the preparation of a scheme for the provision of the necessary facilities for diagnosis and treatment. In formulating such a scheme they will be much assisted by the memorandum from Dr. NEWSHOLME, medical officer to the Local Government Board, on the medical measures which should be taken against venereal diseases. This memorandum is published with the Regulations as a supplement to Mr. LONG'S circular letter, and contains most practical suggestions as to the best methods by which venereal diseases can be controlled under the conditions constituted in the Regulations. The immediate urgent need, says Dr. NEWSHOLME, is that adequate facilities for the diagnosis and treatment of venereal diseases in their early and at all communicable stages should be provided when and where they are absent or deficient. He outlines, under three heads, the arrangements which will be necessary: (*a*) The establishment of clinics at hospitals or elsewhere; (*b*) the supply of salvarsan or its substitutes; and (*c*) the provision of laboratory facilities for aid in

[1] Venereal Diseases: Circular issued by the Local Government Board on July 13th, 1916, to (1) Councils of Counties and County Boroughs; (2) Governing Bodies of Hospitals, and (3) Boards of Guardians; Regulations made by the Local Government Board on July 12th, 1916; and Memorandum by the Medical Officer of the Local Government Board on the Organisation of Medical Measures. Wyman & Sons. Price 1*d*.

diagnosis and treatment. Under this plan each administrative county and county borough is regarded as a unit for the establishment of a scheme for treatment centres, and the clinic would in the first instance be organised in towns where there is a suitable general hospital, and, when practicable, at hospitals having medical schools attached, as well as at hospitals specially designed for women and children. The point is insisted upon both in Dr. NEWSHOLME'S memorandum and in Mr. LONG'S circular letter that every clinic should be available for the treatment of all comers without distinction as to means or as to place of residence, while the treatment should be given as far as practicable in coöperation with the patient's own doctor. These provisions arise directly out of the report of the Royal Commission.[2]

At every clinic the out-patient work, while varying with local circumstances, will certainly be the most important part of the treatment, but accommodation will be required for the treatment of syphilis by salvarsan or its substitutes, and for the care of certain acutely contagious cases whether of syphilis or gonorrhœa, and, further, in the event of surgical complications arising. For such cases a small number of hospital beds will have to be made available. Experience has shown that syphilis in its infectious stages is best treated by periodic injections of salvarsan or its recognised substitutes, supplemented by courses of mercurial treatment. The administration of salvarsan or its substitutes requires special precautions in the selection of patients to whom it may be given, in the technique of administration, and in the frequency of dosage. Such matters will demand from the practitioner a certain amount of practical experience, and it is properly laid down that the medical officer of the clinic should possess such personal experience in the diagnosis of venereal disease and in the modern methods for its treatment. Salvarsan or its substitutes will be supplied gratuitously if administered by the medical officer of the clinic or by a medical practitioner authorised by him, while the officer's duties will include the giving of demonstrations to medical practitioners on the methods of taking and transmitting material for laboratory diagnosis. In this way the level of scientific treatment of venereal diseases will rise rapidly, and it is not foolishly optimistic to expect that our population may soon be largely freed from one of its greatest physical scourges.

[2] "The condition that the institutional treatment should be available for the whole community is one to which we attach cardinal importance. The two main difficulties in curing venereal diseases and thus preventing their spread are to ensure the application of patients for treatment at the outset of the disease, and to maintain continued attendance until the doctor certifies that the patient is free from infection. Although gratuitous treatment will not entirely remove these difficulties, we think it will go far to do so. It may be that persons will present themselves for treatment who, in the opinion of the medical officer in charge, can be satisfactorily treated by their own doctor and who can afford to pay for their own treatment. In such a case we think that the medical officer might properly refer the patient to a private practitioner, but if the patient is unwilling there should, in our opinion, be no refusal to treat him at the institution."—*Report of the Royal Commission on Venereal Diseases.*

Aortic Incompetence.

AN efficient heart is desirable in any walk of life. To the soldier it is a necessity, and the daily experience in camp and on the field is showing that the civilian standard of efficiency is often too low for the fighting man. The experienced examiner of recruits is able to weed out most cases of damaged valves, but his tests are at present insufficient to detect muscular inefficiency which may give rise to trouble later. The truth of this is shown by an inquiry, which we publish this week, into the various conditions which lead men on active service to report sick with symptoms suggesting heart disease. Among 90 consecutive cases so reporting Captain JOHN PARKINSON, R.A.M.C., found only 28 of valvular disease of all kinds, while in 40 others who had definite cardiac symptoms no evidence of any damage to the valvular mechanism could be detected. In another series of cases Captain E. B. GUNSON, R.A.M.C., indicates the rôle which dysentery may play as one of the varied factors in the production of muscular cardiac inefficiency. Numerically infrequent, then, as valvular disease may be in the recruit who has passed a careful clinical examination, the importance of aortic incompetence must not be entirely overlooked. In eight soldiers who complained to Captain PARKINSON of giddiness and faintness six were found to have incompetent aortic valves and in one of these syncope had occurred.

In the quiet and spacious times of peace the victims of aortic incompetence may get along well enough. The strain of warfare both for the combatant and the non-combatant evidently has a specially malign influence upon this form of cardiac lesion and gives to the well-worn topic of digitalis treatment a new and pressing interest. The use of digitalis in aortic incompetence has been discussed at length by numerous authorities, foremost amongst whom was the late Dr. MILNER FOTHERGILL; and Sir CLIFFORD ALLBUTT, Dr. MITCHELL BRUCE, Sir JAMES MACKENZIE, Dr. GEORGE BALFOUR, and others have considerably added to the clinical evidence as to when the drug should be given or withheld. It has been strongly urged that the tone of the heart must be constantly watched, for digitalis has the power of intensifying tone and of moderating distensibility. Careful discrimination, however, has to be employed in determining whether stimulation to the muscular power of the heart is required. Needless to say, the employment of any drug, especially of the digitalis group, simply because a murmur is heard on auscultation, cannot be too strongly deprecated. Digitalis itself is a potent remedy with a tendency to a cumulative action, and its indiscriminate use may be attended with evil consequences. Are there, then, any definite rules that can be laid down for the guidance of practitioners in regard to prescribing digitalis in cases of aortic regurgitation?

In the first place, it must be insisted on that aortic regurgitation may exist without giving rise to any symptoms, the condition only being accidentally discovered, as, for instance, in examination for life assurance; and most physicians could mention cases in their own experience of individuals who had led most active lives without in the least being aware that they were the subjects of a grave cardiac lesion. One of Captain PARKINSON'S cases, a man of 40, who had served 16 months, including six at trench work, was found by chance to have a to-and-fro aortic murmur. Such cases are generally young subjects, often with a history of rheumatic fever in childhood. In other words, a stationary lesion is present with good compensation. A very different condition holds when the aortic regurgitation is the result of degenerative processes—that is to say, a progressive lesion. Some patients live to their ordinary expectancy, and some even beyond, with incompetence of the aortic valves, and without ever having had a dose of digitalis; and some interesting cases of this kind were recorded by Dr. SEYMOUR TAYLOR in our columns last week. But such instances are exceptions to the well-recognised fact that aortic regurgitation is the most serious of all valvular lesions. As long as the compensation continues efficient no treatment is, of course, necessary, but if evidences of failure of the cardiac reserve force begin to assert themselves then systematic treatment is urgently demanded. The most important therapeutical measure is rest, and the extent to which this must be insisted on varies with each individual case. In some instances only slight modification of the patient's usual life is required, such as the avoidance of hurry and of undue mental exertion. Irritability, apprehensiveness, worrying over unimportant details, are all symptoms of want of an efficient circulation through the brain, and if the nervous system can be soothed, bromides being useful for this purpose, improvement may occur without the necessity of employing other drugs. If, however, not only the cardiac "reserve" force but the "rest" force also is impaired, then confinement to bed is necessary, and some modification of diet may be requisite. But in these cases, as in other forms of early heart failure, this paraphrase holds good: "And now abideth diet, drugs, and rest, these three, but the greatest of these is rest." In cases of aortic regurgitation the avoidance of sudden or extreme exertion is all important, for if such precautions are not taken sudden death is not uncommon. The victims of aortic incompetence must be rigidly excluded from the army.

DEPARTMENT OF HOUSEHOLD AND SOCIAL SCIENCE, KING'S COLLEGE (UNIVERSITY OF LONDON).—Dr. Janet E. Lane-Claypon, one of the two women assistant medical inspectors entrusted by the Local Government Board with child-welfare work, has been appointed dean of this department and lecturer on hygiene at the College.

Annotations.

"Ne quid nimis."

THE SUPPLY OF PETROL TO MEDICAL PRACTITIONERS.

THE apportionment of petrol to those members of the medical profession who have duly complied with the requirements of the Petrol Control Committee is now proceeding. The medical profession is receiving the first attention, being given the *pas* of all other users, commercial and private. The apportionment warrants, which are being sent out, should be returned as directed, together with the necessary remittance for the amount of the new duty—in the case of medical men 3*d*. a gallon—and in return a licence will be received, covering a period of six months, authorising the holder of the licence to purchase petrol during each month up to an amount not exceeding the quantity stated on the licence. The distribution does not appear to be based on any particular average of the amount asked for by practitioners in their returns. In one case brought to our notice 70 gallons a month were asked for, and the amount allotted is 50 gallons. In another case 25 gallons were asked for and 24 gallons are allotted. The inference, therefore, is that an effort has been made by the authorities to meet the reasonable requirements of the profession by weighing up each demand so far as is possible, though a very wasteful engine may upset all estimates of reasonable need. If the majority of the profession have been treated on the lines of the medical man who asked for 25 gallons and got 24, the reasonable requirements of the profession will have been met. The new regulations come into force on August 1st, after which date no one can get a supply of petrol unless he is in possession of a special licence for this purpose, and produces the licence for endorsement on each occasion of taking in a supply. There are heavy penalties for any infringement of the regulations, either on the part of the buyer or the seller. So far so good, but there is a weak point in the scheme. It is that the Government do not intend to take over the supply and the distribution of the spirit, so that there is a possibility, and even a great probability, that medical men in the remote country districts, possessing licences to obtain petrol, may find their local dealers without a supply. It would be wise for practitioners so situated at once to take out their licences and forthwith to give their orders to their local garages for the full amount of their monthly requirements, and if they find, as the months go round, that they can do with less than they are authorised to obtain, they should reduce their orders accordingly, to the benefit of the community generally. Those practitioners who did not make the return called for by the Petrol Control Committee will find their supplies cut off altogether unless they quickly take steps to repair the omission.

THE METROPOLITAN WATER-SUPPLY.

COMPARED with the previous months April was a relatively dry one, the mean rainfall for the Thames basin being 1·19 inches, or 0·51 inch below the average mean rainfall for that month during the previous 33 years. The samples of water collected at the different works were, generally speaking,

clear, bright, and free from suspended matter. The results of chemical examination employing the albuminoid nitrogen, permanganate, turbidity, and colour tests showed that the raw Thames and Lee waters improved in quality during the month. The same was true in regard to the raw New River water, except a deterioration shown by the albuminoid nitrogen test. The filtered waters improved generally, though there were exceptions in regard to particular tests. Making a comparison with the 1915 averages, the raw waters yielded results better than their respective averages, as judged by the albuminoid nitrogen, permanganate (in both cases New River excepted), turbidity, and colour tests. The filtered waters fell back to a slight extent on the 1915 averages judged by the usual tests. All three raw waters, however, contained less bacteria than their respective averages, with the exception again of New River water, which contained more, while the filtered waters, generally speaking, yielded not unsatisfactory results. In April 93·7, 81·2, and 0·0 per cent. of the samples of raw Thames, Lee, and New River respectively contained typical B. coli in 1 c.c. (or less) of water examined, while of the filtered water samples derived from these sources 96·3, 94·4, and 93·0 per cent. contained no typical B. coli even in 100 c.c. These results show a remarkable state of bacteriological purity.

DIARRHŒA AND ENTERITIS IN RELATION TO PRIVY MIDDENS.

IN his annual report for 1915 Dr. H. Peck, the medical officer of health for Chesterfield rural district, calls attention to the high diarrhœa death-rate in the district. The number of deaths at all ages from this disorder during the year under review was 43, as compared with 28 in the previous year, the rate per 1000 being 0·64 as compared with the decennial average of 0·79. Dr. Peck states that this rate is always higher in Chesterfield rural district than in England and Wales, where the average rate for the ten years ending 1913 was 0·52, and, in his opinion, the remedy lies in converting all the privies in the more populous parts of the district into water closets. As an example of what may be done in this direction he instances Speedwell, Staveley, where the conversion of the privies in 1911 resulted in the reduction of the death-rate by half, a condition that has continued to the present time. This is certainly a very striking result, though we gather from the Chesterfield rural district annual report for 1913 that the population of the area in question was only 894, and care must therefore be exercised in drawing general deductions from such relatively small figures. Apparently in the two parishes of Heath and Temple Normanton the average diarrhœa rate is high, these parishes having lost annually during the last ten years 2·68 and 2·00 per 1000 respectively of their populations from this preventable disease. The high average rate in these parishes is stated to be due to the presence of the insanitary colliery villages of Holmewood and Bond's Main, the houses of which are built in rows with privy middens flanked by coal-houses placed in an almost continuous line between every two rows. Sutton-cum-Duckmanton, containing Arkwright Town built on similar lines, and Killamarsh, have also high rates. Dr. Peck advocates the carrying out of an almost universal conversion of privies in the southern parishes of the district. The available water supply is at present insufficient to meet the needs of the water-closets which would replace the privies were such a scheme of conversion carried out, and Dr. Peck urges the necessity of increasing the storage capacity of the southern reservoirs and suggests that, as the interests of Chesterfield rural district and Clay Cross urban district might possibly conflict, it would be desirable that the two councils should take joint action in the matter. We hope the authorities concerned will give careful consideration to the recommendations contained in Dr. Peck's annual report with the view of having these much-needed sanitary reforms carried out as soon as the restoration of peace permits of the further expenditure of public money.

INDIA'S VITAL STATISTICS.

HOW fundamentally the health conditions of India differ from those of other countries of the world is brought out in a report issued by the Department of Statistics. This analyses the health returns compiled by the Indian sanitary authorities. It shows, for example, that whereas in practically all European countries there is an excess of female births over male births, in India the contrary is markedly the case, the mean number of male births in India, taking the female births as 100, varying from 126 in the North-West Frontier Province to just short of 101 in Coorg. Again, both the birth- and the death-rate in India are extraordinarily high as compared with Western countries. Like the West, India has a falling death-rate, the India ratio having gone down from 33 deaths per 1000 per annum in 1910 to just under 29 per 1000 in 1913. On the other hand, unlike Europe, India still has a rising birth-rate, the India ratio of births per 1000 of the population having increased from 35 in the quinquennial period 1886–90 to 39 in 1913. As regards provinces, the return shows Delhi as the most unhealthy, with a death-rate of close upon 40 per 1000 in 1913, the year taken for review, while Madras is able to claim to be the most healthy, having had in the same period a death-rate of a little over 21 per 1000.

RENAL GLYCOSURIA.

FROM time to time cases have been recorded in which a small amount of sugar is present in the urine and yet the blood contains only a normal amount of sugar. The patient remains in good health and none of the symptoms of diabetes are present. The body has lost none of its power of assimilating carbohydrate, and diet usually has little influence on the glycosuria. The latter is held to be due to an abnormal permeability of the kidney to sugar, and is therefore termed renal glycosuria or—less correctly—renal diabetes. In the *Johns Hopkins Hospital Bulletin* Dr. D. S. Lewis and Dr. H. O. Mosenthal have published an important paper on the subject in which they report the following case. A man, aged 29 years, who appeared to be in the best of health, came under observation. Six weeks previously he saw his medical attendant for backache, and glycosuria was found. The former quickly disappeared, but the latter persisted in spite of carbohydrate restriction. The urine was of specific gravity 1035 and contained sugar, but was otherwise normal. The amount of sugar in the urine varied from 0·8 to 2 per cent., while the sugar in the blood varied little from the normal, 0·09 per cent. The glycosuria

was considerably reduced by restricting the carbohydrates in the diet, but could be made to disappear only by six days' starvation, and reappeared on only a minimum amount of food. The amount of sugar passed was below 12 grammes daily when carbohydrate was restricted, but reached 30 grammes when the carbohydrate was increased. The question of the relation of renal glycosuria to diabetes is a difficult one and cannot be answered at present. The recorded cases are few and they have not been followed for a sufficient time to ascertain whether diabetes develops. Dr. Langdon Brown has recorded the case of a man, aged 40 years and in good health, who was rejected for life assurance four years previously because the urine contained sugar.[1] His blood contained only 0·04 per cent. of sugar. Yet he was not a typical example of renal glycosuria, as the amount of sugar in the urine on one occasion rose to 9 per cent. Later he lost weight and developed symptoms of neuritis. The blood sugar was found to have risen to 0·142 per cent. He thus passed from hypoglycæmia to hyperglycæmia. Evidently ordinary diabetes was developing from a condition of renal glycosuria.

SPONTANEOUS RUPTURE OF THE MALARIAL SPLEEN.

IN the *Journal of the American Medical Association* Dr. W. E. Leighton, of St. Louis, and Dr. F. Moeller, of Chicago, have reported from the 23rd General Hospital of the British Expeditionary Force, France, a case of spontaneous rupture of the malarial spleen—an occurrence which has been seldom recorded. An artilleryman was admitted in August, 1915, with the following history. He went to India in February, 1912, and in August had an attack of dysentery which lasted a few weeks. After recovery he suffered from chills, which recurred regularly, one during the day and another during the night. After two days' treatment they disappeared and he remained well until October, 1914, when they recurred while he was on a transport returning to England. He again recovered under a few days' treatment. While at the front in France after a severe bombardment he had some nervous trouble for several days. On August 13th, 1915, he was taken ill with chills, fever, headache, and pains in the abdomen. There was no history of any injury. He was put to bed for six days at a casualty clearing station and felt better. He was then removed to the 23rd General Hospital. While on the train he was seized with severe pains in the epigastrium, which extended later over the whole abdomen. On admission the temperature was 97° F. He was emaciated and anæmic. The respirations were slow but shallow, the right chest moved less than the left, and its lower part showed an area of dullness extending ½ inch above the nipple. Over this area vocal fremitus and breath sounds were diminished. The left chest showed normal breath sounds but was hyper-resonant. Cardiac dullness was to the left of the nipple line and the apex beat was one inch from this in the fourth interspace. The abdomen was slightly distended but soft and there was no muscular rigidity. The region of the gall-bladder was very tender, especially towards the epigastrium, and there was some tenderness of the appendix region. Acute attacks of pain, simulating biliary colic but extending to the left upper hypochondriac region, occurred. The temperature ranged from 101° to 102°. During the night of August 25th there was a severe attack of pain in the epigastrium, the temperature fell to 97·4° and the pulse rose to 120. The patient was collapsed. Exploratory laparotomy was performed in the right upper quadrant of the abdomen. Much old clotted blood and also dark fluid blood appeared. There were adhesions between the parietal peritoneum and the liver, but no gall-stones were felt. The spleen was enlarged and soft and the omentum was firmly adherent to its convex surface. The adhesions were not broken down and the abdomen was closed, drainage being provided. Convalescence was interrupted by an attack of pneumonia, and after the crisis chills occurred and the malarial plasmodium was found in the blood. Though no bleeding point was found at the operation the evidence was clear that the source must have been a rupture of the enlarged spleen which led to the formation of adhesions.

[1] Clinical Journal, Jan. 26th, 1916, p. 30.

ROYAL MEDICAL BENEVOLENT FUND: AN EMERGENCY APPEAL.

Dr. Samuel West, as honorary treasurer of this Fund, gratefully acknowledges the receipt of four large donations in response to the appeal which appeared in THE LANCET in July, besides smaller sums. The donations, each of £100, are from Dr. A. Whitfield, Miss Helen Hall, Sir John Tweedy (President of the Fund), and Mr. Hurry Fenwick. At the meeting in the month of May the committee had a balance of only £27 0*s*. 1*d*.; in June a deficit of £16 3*s*. 5*d*.; and in July a balance of £24 13*s*. Grants in relief were made in May of £197; in June of £190; and in July of £280 15*s*.; £667 15*s*. in all, the amount expended thus exceeding the receipts by no less than £632 5*s*. 4*d*. The need of liberal and immediate relief is obvious, and subscriptions should be sent to Dr. Samuel West, at 11, Chandos-street, Cavendish-square, W. We refer our readers to a letter from Dr. West published in another column.

WE deeply regret to learn of the death of Sir Victor Horsley, which occurred in Mesopotamia at the beginning of this week. In him we have lost one of the first exponents of British surgery, a great physiological discoverer, and a forceful and generous personality. His death will be universally deplored.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

MEETING OF COUNCIL.

A QUARTERLY meeting of the Council was held on July 13th, Sir W. WATSON CHEYNE, the President, being in the chair.

Sir W. Watson Cheyne was re-elected President of the College, and Mr. Harrison Cripps and Mr. Charters Symonds were elected Vice-Presidents for the ensuing collegiate year.

The PRESIDENT announced the result of the recent election of members of Council. Mr. Haslam and Mr. Johnson were introduced, and they made declarations in the terms of the oath prescribed by the Charter of 1800, and took their seats in the Council. Mr. Charters Symonds, re-elected on a previous occasion, was also introduced.

It was resolved to grant jointly with the Royal College of Physicians of London, Diplomas in Public Health to three successful candidates.

The PRESIDENT reported, on behalf of himself and the Vice-Presidents, that, as requested by the Council in July, 1915, they had on Dec. 14th, 1915, June 8th and July 6th, 1916, held conferences with Sir Arthur Downes and Dr. Fuller, of the Local Government Board, on the subject of the special fees to Poor-law medical officers, and that as a result of these conferences it was proposed to

recommend to the Board to introduce several alterations and amendments in the General Order of the Board relating to the matter.

Sir FREDERIC EVE reported his attendance, as the representative of the College, at the meetings of the committee appointed by the Commissioner of Police to consider the conditions under which licences to drive motor-cars might be granted to maimed persons; he stated that the committee had now sent in its report.

A letter was read from the Rubber and Tin Exports Committee stating that, largely owing to the kind assistance of Mr. S. G. Shattock, the questions which had arisen in connexion with the export from this country to neutrals of surgical rubber goods have now been settled satisfactorily, and thanking the College for the assistance given in the matter.

A letter was read from the assistant secretary of the Royal Society forwarding a copy of regulations for the organisation of a Conjoint Board of Scientific Societies adopted at a conference of the societies concerned convened by the Royal Society, and asking the College to nominate two representatives to the Board in accordance with the provisions of the scheme. The President and Sir John Bland-Sutton were named.

A letter was read from Sir Alfred Pearce Gould resigning his membership of the Committee of Management and of the Executive Committee of the Imperial Cancer Research Fund. The best thanks of the Council were given to Sir Alfred Pearce Gould for his services. Mr. Haslam was appointed a member of the Committee of Management, and Mr. Bilton Pollard was appointed a substitute member for Sir George Makins. Mr. D'Arcy Power was elected a member of the Executive Committee of the Imperial Cancer Research Fund.

The following professors and lecturers were appointed:—Hunterian Professors.—Dr. Arthur Keith: Six lectures on the Anatomy of the Human Body; Mr. Jonathan Hutchinson: One lecture on the Surgical Treatment of Trigeminal Neuralgia; Mr. Robert Henry Elliot: Two lectures on the Operation of Couching of the Lens for Cataract as Practised in India; Mr. William Sampson Handley: One lecture on Paget's Disease of the Nipple; Mr. Alfred Edward Webb-Johnson: One lecture on the Surgical Complications of Typhoid and Paratyphoid Fevers; Mr. Frank Cook: One lecture on Gunshot Wounds of Joints, their Pathology and Treatment. Arris and Gale Lecturers.—Mr. Ernest W. Hey Groves: One lecture on Bone Growth and Bone Grafting; Dr. Wilfred Harris: Two lectures on the Morphology of the Brachial Plexus in its Relation to Surgery. Erasmus Wilson Lecturer.—Mr. Samuel George Shattock: Six demonstrations on Surgical Pathology. Arnott Demonstrator.—Dr. Arthur Keith: Eighteen demonstrations on the Anatomy of the Human Body. These demonstrations, with the six Hunterian lectures, are to form a course of 24 lectures suitable for ambulance and first-aid students, 12 to be given in the autumn of 1916 and 12 in the spring of 1917. Odontological Demonstrator.—Mr. James Frank Colyer: Two demonstrations on Fractures of the Jaw.

The Council resolved that the attention of the Fellows and Members of the College should be called to the improper use which may be made of medical certificates and the responsibility which is attached to their issue, the resolution arising out of the statements made to the College that the Naval authorities had complained of laxity.

DONATIONS AND BEQUESTS.—The late Miss Ellen Constantia Hodgkinson, of Preston, Lancs, has bequeathed £1000 to the Royal Infirmary at Preston, £500 to the Preston Parish Nurses Fund, and £300 to the Church of England Zenana Missionary Society.—By will the late Mrs. Mary Jane Smith, of Leamington, has bequeathed £400 to the Earlswood Asylum for Idiots, and £500 to the Warneford, Leamington, and South Warwick General Hospital.—The late Miss Agnes Crowley, of Marylebone, has left property of the value of £12,949 to be divided, subject to life interests, among the Hospital for Sick Children, Great Ormond-street, the Inwood Cottage Hospital, Alton, the Governesses' Benevolent Society, the Surgical Aid Society, the Hospital for Women, Soho-square, the Middlesex Hospital, the Alton Town Nursing Fund, the National Benevolent Society, and the Hazelwood House Branch of the Y.M.C.A., Ryde.—The Chelsea Hospital for Women has received two anonymous donations of £1000 each to establish memorial beds in the new hospital.—Sir John Llewellyn has given the further sum of £1000 to the Swansea Hospital.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

To be temporary Surgeons: John A. D. Skinner, R. O. Townend, and T. R. F. Kerby.

The following appointments have been notified:—Fleet-Surgeons: J. St. T. Murphy to the *Commonwealth* and R. St. G. S. Bond to Plymouth Hospital.

ARMY MEDICAL SERVICE.

Lieutenant-Colonels to be temporary Colonels whilst Assistant Directors of Medical Services: R. J. W. Mawhinny and D. J. Collins.

Canadian Army Medical Corps: Majors to be temporary Lieutenant-Colonels: G. Bourgeois, E. A. Le Bel, F. H. L. de Martigny, and H. J. Theriault. Captain R. Mayrand to be temporary Major.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

Temporary Lieutenant D. R. Jones, from R.A.M.C., to be Captain.

Staff-Sergeant C. O. J. Young, from Dublin University Officers Training Corps, to be Lieutenant (on probation).

TERRITORIAL FORCE.

Royal Army Medical Corps.

Welsh Field Ambulance: R. R. Powell to be Lieutenant.

Welsh Border Mounted Brigade Field Ambulance: C. Jephcott, to be Lieutenant.

Highland Field Ambulance: Lieutenant G. Torrance to be Captain.

Lowland Field Ambulance: Captain E. S. Forde, Scottish Borderers, to be temporary Major.

Southern General Hospital: Captain L. G. Parsons is seconded.

London Sanitary Company: The undermentioned Lieutenants to be Captains: J. Davidson, H. Duguid, W. S. H. Campbell, W. A. F. Balfour-Browne, and R. A. Aşkins.

West Lancs. Casualty Clearing Station: Lieutenant E. M. De Jong to be Captain.

West Lancs. Divisional Sanitary Section: Lieutenant A. Reid to be Captain.

Attached to Units other than Medical Units.—Lieutenants to be Captains: F. M. Hughes and T. E. Saunt. P. Pope to be Surgeon-Captain in the Territorial Cadet Training Corps.

THE CONSERVATION OF CHILD LIFE.—Dr. Maxwell Williamson, medical officer of health of Edinburgh, has prepared a scheme for the conservation of child life, which is to be considered by the public health committee of the town council. Dr. Williamson points out that the Notification of Births Act, 1915, confers upon local authorities the power to frame and carry out schemes for the preservation of the mother during her maternity periods, and for supervision over the lives of the children under 5 years of age. He says that in every large community there is a serious sacrifice of child life which could be very materially reduced under special care and the adoption of every possible preventive measure. The two principal causes of death in Edinburgh are measles and whooping-cough, but even more important as causes of death are those resulting from premature birth or associated in some way with maternity conditions which under suitable treatment are undoubtedly preventable. In Edinburgh there are already a great many agencies whose special object is the benefit of the child and the mother, and Dr. Williamson's scheme is to link up all these into one whole. The two main centres would be the Royal Hospital for Sick Children and the Royal Maternity Hospital, and the different dispensaries in the city would be subsidiary centres. At these centres provision would be made for adequate treatment, the whole of the supervision being under the medical officer of health. The additional office staff necessary would include one lady doctor, two female clerks, two female official visitors, and six district nurses. Certain other existing institutions would be included in the scheme, and maternity and child clinics would be held. The names of expectant mothers attending the former would be duly registered, and if the person is not insured and is unable to pay the fee of a doctor, she would be supervised, and if necessary would continue to attend the clinics after the birth of the child. The child clinics would be devoted to the care of infants and children from the time of birth to the age of 5 years. Records would be kept, and medicines, milk, &c., supplied free. The cost of the centre scheme would be £6125 per annum.

Obituary.

ELIE METCHNIKOFF,

NOBEL LAUREATE; SUB-DIRECTOR OF THE PASTEUR INSTITUTE IN PARIS.

A YEAR ago we recorded the death of Paul Ehrlich and now his great contemporary Elie Metchnikoff has passed away. Twenty years ago their teaching of the mechanism of immunity, the one representing the German "humoral" school, the other the French "cellular" school—was still in the sharpest possible contrast. Now, in the fuller light of modern bacteriological research, the two views have almost become blended into a harmonious whole.

To Metchnikoff we owe the first serious attempt to explain the resistance of the body to bacterial invasion. Setting aside the crude and speculative views put forward by Pasteur and Chauveau, who regarded the animal body as a mere culture medium for the growth of micro-organisms, which flourished in it until the necessary pabulum was exhausted or their own products choked them, Metchnikoff formulated the conception of an active bodily defence finding its mechanism in the functions of the leucocytes. Panum (1874) and Roser (1881) had previously suggested that bacteria might be ingested by these cells, but to Metchnikoff is due the entire development of the idea that leucocytes possessed as a normal function the power of digesting and destroying foreign particles, and amongst them the invading parasitic organisms. It was in 1883, in an address delivered at Odessa before the Congress of Naturalists and Medical Men, that he first propounded the doctrine of phagocytosis as the main defensive agency of the body.

ELIE METCHNIKOFF,
SUB-DIRECTOR OF THE PASTEUR INSTITUTE, PARIS.

Metchnikoff was by up-bringing a biologist, and his views were naturally founded upon a long series of patient studies on the lower forms of life, enabling him to trace the phagocytic process from the lowliest up to the most specialised members of the animal kingdom. The central fact of his theory could readily be verified by anyone, and the theory of phagocytic defence immediately gained a wide acceptance. At that time the properties of the microbe were but very imperfectly understood, and the influence upon them of the fluids of the body had not entered anyone's mind. During the 15 years which followed Metchnikoff's first announcement a knowledge of the properties of the fluid elements of the blood gradually accumulated. The bactericidal power of the blood serum was first noted by Foder (1887) and expounded by Buchner (1889) in his alexine theory in fundamental antagonism to Metchnikoff's views. Pfeiffer's enunciation of the doctrine of bacteriolysis in 1894 paved the way for Ehrlich's comprehensive study of humoral phenomena, and for a very wide acceptance of the side-chain theory which ascribed the dominating influence in the body's defence to the fluid elements of the blood. Ehrlich was a chemist, and his theory naturally followed on his investigations of the specific action of dyes on living tissues.

It is a matter of recent history how these two apparently widely divergent views can be harmonised. Undoubtedly the most important step in this direction was taken by Wright when he popularised the notion of the necessity of the presence of a humoral element in the blood preparing the bacteria for phagocytosis. Denys and Leclef in 1895 had partly foreshadowed this result, but the teaching of the Louvain school had not attracted any wide attention. It is enough to point out here how the opsonin theory of Wright, the bacteriotropin theory of Neufeld, and the aggressin theory of Bail have gradually reconciled the views of Metchnikoff and Ehrlich in a harmonious theory of the resisting powers of the whole blood as a complete tissue, on which the symmetrical modern structure of immunity is being firmly built up.

Of Metchnikoff's writings the most important is the "Immunity in Infectious Diseases" (1901), summing up, as he himself states, the labours of 25 years. This book he dedicated to MM. Duclaux and Roux, generously acknowledging their assistance to a zoologist who had wandered into the domain of biological chemistry and medical science. Of this work an English translation appeared in 1905 (Cambridge University Press). In another large book, "The Nature of Man: Studies in Optimistic Philosophy" (English translation. 1903. W. Heinemann), Metchnikoff enunciated his creed that the fear of death, which grows as old age creeps upon us, is only the prompting of an instinct which tells us that we are dying before life's span has run its natural course. He claimed that senile decay was mainly due to the destruction of the higher elements of the organism by microphages, saying that if intestinal and other toxins were eliminated by modern surgical methods and appropriate hygiene the number of man's days might be greatly extended until he should meet a natural death whose coming would be welcome. Later on, as is well known, Metchnikoff found in the Bulgarian bacillus an agent to assist this production of longevity. The Harben lectures on the "New Hygiene" delivered in French in May, 1906, and reprinted

in a small volume (1906. W. Heinemann), dealt in a popular manner with the subjects of his larger works, and in the third lecture with the inunction of mercurial ointment as a prophylactic against syphilitic infection, based on the successful protection of apes by this method.

Elie Metchnikoff was born at Kharkov, in Russia, in 1845, and died at the Pasteur Institute, in Paris, on July 15th, 1916, at the age of 71 years. After graduating at Kharkov University at the age of 19, he studied at Giessen, Göttingen, and Naples, becoming professor of zoology in the University of Odessa when he was 25. Five years after publication of his thesis on phagocytosis, in 1888, he received an invitation from Pasteur to work with him in Paris at the laboratory in the École Normale, which was the predecessor of the Pasteur Institute, at which he was later appointed sub-director. He remained in Paris, where his death has now occurred nearly 30 years later. Metchnikoff was a foreign member and medallist of the Royal Society, a foreign member of the Linnean Society, an honorary member of the Manchester Literary and Philosophical Society, an honorary D.Sc. of Cambridge, and a member of the Academy of Sciences of Paris and Petrograd. In 1908 he was awarded a Nobel medal, and only a few weeks ago the Albert Medal of the Royal Society of Arts was conferred upon him in recognition of the value of his investigations into the causes of immunity.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 96 largest English and Welsh towns with populations exceeding 50,000 persons at the last Census, 7852 births and 3552 deaths were registered during the week ended Saturday, July 15th. The annual rate of mortality in these towns, which had been 12·6, 11·6, and 11·1 per 1000 in the three preceding weeks, fell in the week under notice to 10·7 per 1000 of their aggregate civil population, estimated at 17,312,295 persons for the year 1915. During the 13 weeks of last quarter the mean annual death-rate in these towns averaged 14·3, against 13·8 per 1000 in London. Among the several towns the death-rate last week ranged from 4·2 in Ipswich, 4·7 in Ealing, 4·8 in Southend-on-Sea, 4·9 in Blackpool, and 5·0 in Leyton and in Barrow-in-Furness, to 14·5 in Wigan, 14·8 in Stockport, 15·3 in Walsall, 15·6 in Carlisle, and 21·0 in Hastings.

The 3552 deaths from all causes were 141 below the number in the previous week, and included 222 which were referred to the principal epidemic diseases, against numbers declining from 335 to 224 in the six preceding weeks. Of these 222 deaths, 62 resulted from measles, 51 from infantile diarrhœal diseases, 47 from diphtheria, 40 from whooping-cough, 15 from scarlet fever, and 7 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 0·7 per 1000, and coincided with that recorded in each of the four preceding weeks. The deaths attributed to measles, which had been 67, 68, and 60 in the three preceding weeks, slightly rose to 62, and included 18 in London, 7 in Liverpool, 4 in Sheffield, and 3 each in West Ham, Walthamstow, and Newcastle-on-Tyne. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had been 45, 50, and 54 in the three preceding weeks, fell to 51, of which 16 occurred in London, 4 in Liverpool, and 3 in Birmingham. The fatal cases of diphtheria, which had been 27, 29, and 36 in the three preceding weeks, further rose to 47, and included 13 in London and 3 in Liverpool. The deaths attributed to whooping-cough, which had been 77, 55, and 61 in the three preceding weeks, fell to 40; 8 deaths were recorded in London, 5 in Birmingham, 4 in Liverpool, and 3 in Manchester. The deaths referred to scarlet fever, which had been 15, 13, and 4 in the three preceding weeks, rose to 15, and included 4 each in London and Liverpool and 2 in Southampton. The fatal cases of enteric fever, which had been 13, 10, and 9 in the three preceding weeks, further fell to 7, but showed no excess in any particular town.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had been 1303, 1273, and 1262 at the end of the three preceding weeks, further declined to 1236 on Saturday last; 150 new cases were admitted during the week, against 171, 162, and 170 in the three preceding weeks. These hospitals also contained on Saturday last 1274 cases of diphtheria, 196 of measles, 162 of whooping-cough, and 47 of enteric fever, but not one of small-pox. The 889 deaths from all causes in London were 4 in excess of the number in the previous week, and corresponded to an annual death-rate of 10·8 per 1000. The deaths referred to diseases of the respiratory system, which had been 157, 107, and 95 in the three preceding weeks, rose to 117 in the week under notice.

Of the 3552 deaths from all causes in the 96 towns, 126 resulted from violence, and 263 were the subject of coroners' inquests, while 1152 occurred in public institutions. The causes of 34, or 1·0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Sheffield, Leeds, Bristol, Bradford, Newcastle-on-Tyne, and in 66 other smaller towns. Of the 34 uncertified causes, 7 were registered in Birmingham, and 2 each in London, Liverpool, and South Shields.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,372,000 persons at the middle of this year, 1098 births and 571 deaths were registered during the week ended Saturday, July 15th. The annual rate of mortality in these towns, which had been 13·4, 12·6, and 12·4 per 1000 in the three preceding weeks, rose to 12·6 per 1000 in the week under notice. During the 13 weeks of last quarter the mean annual death-rate in these towns averaged 15·3, or 1·0 per 1000 in excess of that recorded in the large English towns. Among the several towns the death-rate last week ranged from 2·9 in Perth, 7·8 in Ayr, and 8·0 in Hamilton and Clydebank, to 14·0 in Kilmarnock, 16·0 in Coatbridge, and 18·4 in Falkirk.

The 571 deaths from all causes were 8 in excess of the number in the previous week, and included 44 which were referred to the principal epidemic diseases, against 54 and 46 in the two preceding weeks. Of these 44 deaths, 18 resulted from measles, 8 each from whooping-cough and infantile diarrhœal diseases, 7 from scarlet fever, and 3 from diphtheria, but not one from enteric fever or from small-pox. The annual death-rate from these diseases was equal to 1·0, against 0·7 per 1000 in the large English towns. The deaths attributed to measles, which had been 19, 28, and 19 in the three preceding weeks, numbered 18, of which 13 occurred in Glasgow and 3 in Leith. The deaths referred to whooping-cough, which had been 4, 5, and 8 in the three preceding weeks, were again 8 last week, and comprised 5 in Glasgow and 3 in Coatbridge. The fatal cases of diarrhœa and enteritis (among infants under 2 years), which had been 11, 13, and 5 in the three preceding weeks, rose to 8, and included 4 in Glasgow. The deaths attributed to scarlet fever, which had been 7, 1, and 8 in the three preceding weeks, numbered 7 last week, of which 5 were registered in Glasgow. The 3 deaths from diphtheria were 3 below the average in the 13 weeks of last quarter, and comprised 2 in Glasgow and 1 in Kirkcaldy. In addition to the above deaths, 3 fatal cases of typhus were registered in Glasgow.

The deaths referred to diseases of the respiratory system, which had been 75, 57, and 64 in the three preceding weeks, fell to 50 in the week under notice, and were 10 below the number registered in the corresponding week of last year. The deaths from violence numbered 16, against 22 and 23 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the registration area of Dublin 182 births and 143 deaths were registered during the week ended Saturday, July 15th. The annual rate of mortality, which had been 15·9, 17·3, and 17·6 per 1000 in the three preceding weeks, was 18·8 in the week under notice, or excluding 27 deaths resulting from the recent disturbances it was equal to 15·3, against 10·8 and 13·7 per 1000 in London and Glasgow respectively.

Of the 143 deaths at all ages, 17 related to infants under 1 year and 29 to persons aged 65 years and upwards. Two deaths were referred to whooping-cough and 1 each to measles, scarlet fever, and infantile diarrhœa.

The causes of 33 deaths were uncertified, and 2 others were the subject of coroners' inquests, while 55, or 38 per cent., of the total deaths occurred in public institutions.

During the same period 165 births and 110 deaths were registered in the city of Belfast. The deaths corresponded to an annual rate of 14·7, or 2·3 per 1000 higher than that recorded in the previous week, and included 15 of infants under 1 year and 19 of persons aged 65 years and upwards. Four deaths were referred to measles, 2 to scarlet fever, and 1 each to enteric fever, whooping-cough, and infantile diarrhœa. The causes of 2 deaths were uncertified, and 7 others were the subject of coroners' inquests, while 31 occurred in public institutions.

TRAFFIC IN NARCOTIC DRUGS.—The conviction on Tuesday at Marlborough-street police-court of seven men charged with being concerned in the sale of cocaine to a member of His Majesty's Forces, has called public attention to a state of affairs which has long given rise to anxiety in medical circles. Action was taken under a recent Army Order based upon the Defence of the Realm Act, but the civilian is in urgent need of the same protection from the cocaine habit, and we trust that the publicity given to the circumstances in the press may aid in obtaining it for him.

Correspondence.

"Audi alteram partem."

THE NATURE OF THE CHANGES WHICH OCCUR IN MUSCLE AFTER NERVE SECTION.

To the Editor of THE LANCET.

SIR,—There are one or two points in Dr. F. Hernaman-Johnson's letter in your issue of July 15th on which I may perhaps be allowed to make a few remarks.

1. Dr. Hernaman-Johnson says that it is easy to believe that sufficiently violent faradism will cause contraction in denervated muscles. This mode of expression seems to imply what is more definitely stated in the late Dr. Lewis Jones's work on "Medical Electricity"—viz., that after nerve section there is a rapid early fall in the irritability of the muscle fibres. I do not think this is the case. The fall of irritability seems to me to be gradual throughout. When a rapid decrease of irritability is observed it is, I think, due to nerve degeneration. Strong faradic currents are required to stimulate directly muscle fibres whether they are normal or denervated when large electrodes are used and they are placed on the skin overlying the muscles, but weak currents are sufficient if the electrodes are small and they are placed directly on the muscle. I have thus obtained contraction in denervated muscles (which had lost about 50 per cent. of their weight) on stimulating them with faradic currents which I could barely feel on the tip of the tongue.

2. On general grounds I should be inclined to agree with Dr. Hernaman-Johnson that electrical stimulation causing contraction is beneficial in the stage of regeneration, but the earlier the stage the greater care should, I think, be taken to avoid fatigue, since regenerating nerve is very easily fatigued by electrical stimulation, and the normal impulses thus cut off. Whilst I do not think that contraction caused by electrical currents has any appreciable effect in preventing the wasting of denervated muscle, I have not found that it causes any appreciable increase of wasting. Its harmful effect, when it has any, probably occurs in cases in which it produces traction of the nerves, and in consequence delays regeneration.

3. Dr. Hernaman-Johnson urges physiologists to abandon the use of the faradic coil. He is, I think, under some misapprehension as to the use to which the faradic coil is put in physiological laboratories. Its merits and demerits have received a great deal of attention, and have been fairly thoroughly worked out. For purposes of accurate measurement of nerve- or muscle-irritability the coil with vibrating hammer is not used. The methods which are used may be gathered from papers published in the *Journal of Physiology* during the last 10 years by Dr. Keith Lucas, by the late Professor Mines, and by Mr. Adrian. (Condenser currents, I may mention, were employed by Professor Waller in 1899.) But for a first approximation a du Bois Reymond coil, or some modification of it, gives sufficiently accurate results, and it would be as sensible to dispense with its use as it would be to give up the ordinary thermometer because we can measure a variation of temperature to about a millionth of a degree centigrade.

I am, Sir, yours faithfully,

July 17th, 1916. J. N. LANGLEY.

THE RELIEF OF DISTRESS IN THE MEDICAL PROFESSION ARISING OUT OF THE WAR.

To the Editor of THE LANCET.

SIR,—The war has already produced much distress in the medical profession, and this is certain to increase if the war continues long. The distress will, I trust, gradually relieve itself when the war is over, and the doctors now serving return to their civil duties. Meanwhile the present distress is considerable. The Auxiliary R.A.M.C. Fund which has been proposed, will, if worked on the lines of the regular R.A.M.C. Fund, provide, so far as I can judge, only for the education of the orphans of officers serving temporarily in the war, and who are subscribers to that Fund. This requires a large capital sum and involves considerable liabilities extending over many years. Worthy as such an object is in itself, it does not deal with the immediate distress at all.

A scheme which appears to be strongly supported proposes to deal with this temporary distress by way of loans. For such a purpose a very large sum will be necessary. It is a scheme which no doubt would be very appropriate for certain cases, but experience has shown that a loan fund is very difficult to administer satisfactorily. Loans, too, require time for arrangement, and in many of the most urgent cases time is pressing, and there may be no security upon which loans can be safely raised. In most cases what is required is immediate help, and often to a substantial amount. It is this class with which the Royal Medical Benevolent Fund is already dealing, so far as its means permit, from its Emergency Fund, for which a special appeal was issued last week. This department of the Fund is a going concern, and it only needs larger resources. I have not seen that it has been proposed to form any new fund upon the same lines, and on general grounds such duplication is neither necessary nor desirable. The profession wants, I am told, a workable scheme, and I make this suggestion in the belief that this plan would be the simplest and least expensive way of dealing with the problems that have arisen.—I am, Sir, yours faithfully,

Wimpole-street, W., July 18th, 1916. SAMUEL WEST.

THE ODOUR OF PAINT AS A CAUSE OF PLUMBISM.

To the Editor of THE LANCET.

SIR,—In your annotation of May 27th, in which my article in the same issue on the Odour of Paint as a Cause of Lead Poisoning is referred to, the question of cooking utensils as the source of the lead was put forward. I had previously inquired into this, but on being told that only iron saucepans were used I went no further into the matter, not realising that this domestic article was "tinned." On later investigation I found that of two iron saucepans in use (the ordinary tinned variety), one was to all appearances sound and gave no ocular evidence of lead; the other, smaller and more frequently used, had at the bottom half its area covered with what looked very like solder, cutting and glistening like this alloy. Its presence was explained by the saucepan having "caught" at some time. I filled it with rain-water, and to make sure of this being strongly alkaline added some soda, which is sometimes done in the cooking of vegetables. The water was then boiled for three hours and a sample was sent to the Clinical Research Association, who reported that the specimen was examined for lead with entirely negative results. With regard to other cooking articles, the frying-pan in use is blameless, and no enamelled ware is used. Against the saucepan being the source of the poisoning is the negative report and the fact that, although in continuous use, the patients are now well. I am informed by a tinman that "tinning" consists in running on to the inside of the pot a mixture of lead and tin, I believe in equal proportions. It therefore puzzles me that lead does not get into the system more frequently than it does, because it must surely take some time for a protective covering to form and render the alloy innocuous.—I am, Sir, yours faithfully,

HENLEY H. MOYLE, M.R.C.S.

Henstridge, Somerset, July 7th, 1916.

MARY MURDOCH MEMORIAL LOAN FUND.

To the Editor of THE LANCET.

SIR,—This fund has been raised to perpetuate the memory of Dr. Mary Murdoch, her high professional standard, and the inspiration and encouragement she was to her colleagues and friends. By its means it is hoped that the remembrance of her work for women will not pass away with the generation of those who have known and loved her.

The committee which has been formed to administer this fund is prepared to grant loans of £100 or less, free of interest, so as to give women doctors some financial help at a time when they may specially need it. Such special need might be during their early years of establishment in

practice, to enable them to study some special subject or purchase some particular apparatus, &c., thus making their work more valuable and efficient.

This fund will be open to all medical women, but special preference will be given to those who have been trained at the London School of Medicine for Women, which was Dr. Murdoch's own school.

All applications will be regarded as confidential, and should be made to the Hon. Mrs. Franklin, 50, Porchester-terrace, London, W.

I am, Sir, yours faithfully,

H. FRANKLIN,
Hon. Secretary and Treasurer to the Mary Murdoch Memorial Loan Fund.

July 17th, 1916.

MEDICAL WOMEN'S FEDERATION.

To the Editor of THE LANCET.

SIR,—Owing to an oversight in proof-correcting on my part there is an error in your sympathetic paragraph on the formation of the Medical Women's Federation. The word "President" following the signature of Dr. Helen Boyle should have been deleted. It refers to one only of the federated associations—viz., the Registered Medical Women's Association. None of the officers of the Federation have been appointed.—I am, Sir, yours faithfully,

JANE WALKER,
Secretary and Treasurer (*pro tem.*).

Harley-street, W., July 17th, 1916.

THE TREATMENT OF OSTEO-ARTHRITIS BY CONTINUOUS COUNTER-IRRITATION.

To the Editor of THE LANCET.

SIR,—I have read with much interest Mr. Wheeler's paper on operative treatment of osteo-arthritis in THE LANCET of June 24th.

It is a matter of extreme regret to me that so few writers allude to the method of continuons counter-irritation, as recommended by Dr. P. W. Latham, when dealing with arthritis. He writes:[1] "Upon the foregoing data it is not unreasonable to assume that the joint troubles in rheumatoid arthritis are due to spinal congestion or chronic myelitis chiefly affecting the ganglion cells of the anterior horns, but extending also, when the disease is associated with glossy skin, to the ganglion cells in the posterior horns. If this is the case, the natural inference would be that, in the earlier stages of the malady at all events, the treatment should be directed to the abatement of this spinal congestion, and that probably this can be most effectively done by cupping or blistering the spine." I have personally practised this for over 18 years in all classes of cases of arthritis, whether rheumatoid, osteo-arthritic, or septic, and am convinced it is a most valuable means of arresting the disease process. In fact, I never think of advising surgical procedures of any kind until my patients have been carefully treated by this means, and I am convinced the disease is for all practical purposes quiescent. In the decided majority of cases I am of opinion it is superior to vaccines or any other form of treatment.

A vivid light has been thrown on how such measures act by Dr. Gougerot, of Paris, who states[2] that a mechanism exists by which germs and toxins are conveyed from various parts of the system to the skin, by the blood, where *they are fixed and burnt up.* Also that this mechanism may be heightened by artificial stimulation of the skin by means of irritants. I am, Sir, yours faithfully,

July 12th, 1916. W. J. MIDELTON.

OBLITERATIVE ARTERITIS AND LEAD POISONING.

To the Editor of THE LANCET.

SIR,—In the issue of THE LANCET of June 3rd, 1916, on p. 1133, you publish in an annotation on the above subject an abstract of a case of arteritis obliterans due to lead poisoning reported by me. The case was published in the Conferences of the Neurological Institute of New York, and it might be of interest to your readers to give them its outcome.

The man was operated upon by Dr. Dowd, in New York, in the early part of this year. The left foot was amputated a few inches above the ankle. During the operation the tourniquet which had at first been applied was removed, and there was no bleeding from the cut surfaces or from the bony canals. It was much as though one were operating upon a cadaver. In spite of this apparent lack of circulation the man made a good operative recovery. The muscular tissue that was removed at the operation was examined and found to contain large amounts of lead, and the cross section of one of the arteries showed an obliterating arteritis, with hypertrophy of the middle coat of the artery, together with the disappearance of portion of the intima, giving an appearance similar to that described by Kolisko.

I am, Sir, yours faithfully,

New York City, June 26th, 1916. WALTER TIMME, M.D.

TUBERCULOSIS AND SQUINT.

To the Editor of THE LANCET.

SIR,—I have found squint to be much commoner in tuberculosis, both pulmonary and extra-pulmonary, than in healthy members of the general population similar in respect of age, sex, and social condition: seemingly squint is a sign of tuberculous predisposition. The figures are: In 500 sputum-positive consumptives, 6 cases of squint; in 100 surgical tuberculous patients, 2 cases; and in 1050 non-tuberculous persons, 3 cases.

The only previous observation of this kind found is by no less an author than Homer. It is interesting to think that the picture of Thersites—

> "Cross-eyed he was, and halting moved on legs
> Ill-pair'd; his gibbous shoulders o'er his breast
> Contracted, pinch'd it ....."—

was drawn from a tuberculous cripple of soured disposition, and of that anti-authoritarian bent which was less in favour then than now. I am, Sir, yours faithfully,

July 13th, 1916. W. C. RIVERS.

FAT-HEADEDNESS.

To the Editor of THE LANCET.

SIR,—Your correspondent of July 15th, who screens himself under the guise of "Hospital Superintendent," makes the offensive assumption that I went to the committee. I did not. The hospital was represented by another official. From the tone of his letter I infer that "Hospital Superintendent" is eminently suited to be a member of the committee. I am, Sir, yours faithfully,

R G. HEBB.

The Laboratory, Westminster Hospital, July 17th, 1916.

THE QUESTION OF PRIVATE OPERATIONS ON SOLDIERS.

To the Editor of THE LANCET.

SIR,—The following case may interest your readers. This week a private (of independent means) in the Australian Forces was sent to me in consultation by a general practitioner as to the expediency of a certain operation. This I agreed was necessary. The patient wished it performed soon and expressed a special wish that I should perform it. I gave him at his request a fully explanatory certificate. With this he asked for leave. His superiors refuse him permission for a private operation, giving as their reason that the Australian authorities are responsible for him, and therefore if he has an operation it must be done by an Australian surgeon in an Australian hospital.

This appears to me to be a very high-handed way of dealing with a patriotic volunteer, and, incidentally, a very poor compliment to British surgery.

I am, Sir, yours faithfully,

July 10th, 1916. F.R.C.S

THE ANGLO-BELGIAN HOSPITAL, CALAIS.—Lieutenant F. J. Stevens, medical officer of health of Camberwell, subject to the approval of the Local Government Board, will take up the post of medical officer to the Anglo-Belgian Hospital for six months.

[1] The Pathology and Treatment of Rheumatoid Arthritis, THE LANCET, April 6th, 1901, p. 998.
[2] Medical Press and Circular, June 7th, 1916.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Killed.

Captain J. C. Rix, R.A.M.C., attached to the Yorks Regiment, was educated at Cambridge University and at Middlesex Hospital, and qualified in 1902. Before joining the R.A.M.C. in April, 1915, he was in practice at Tunbridge Wells, and was formerly school medical officer to the local Education Committee.

Lieutenant C. P. Kelly, R.A.M.C., qualified at Dublin in 1914, and was for a time senior house surgeon at Southport Infirmary. He joined the R.A.M.C. in August, 1915.

Captain D. W. Smith, R.A.M.C., attached to the Manchester Regiment, was educated at Edinburgh, at Guy's Hospital, London, and at Berlin, and qualified in 1901.

Lieutenant R. J. Jones, R.A.M.C., attached to the Royal Welsh Fusiliers, was educated at University College, Liverpool, and qualified M.B., Ch.B., at Victoria University, Manchester, in 1901. He was in practice at Cardiff before joining the R.A.M.C.

Captain E. W. Lawrence, R.A.M.C., attached to the Royal Welsh Fusiliers, was educated at Cardiff and at Edinburgh University, and qualified M.B., Ch.B. Edin. in 1910. He was deputy medical officer of health of the Bridgend Union at the time he joined the R.A.M.C.

Died of Wounds.

Captain G. O. Maw, R.A.M.C., was educated at Cambridge University and at St. Bartholomew's Hospital, London, qualifying in 1912, and joined the R.A.M.C. in January, 1915.

Lieutenant W. R. Wilson, R.A.M.C., attached to the Seaforth Highlanders, was educated at Epsom College, afterwards obtaining the Haviland exhibition and proceeding to Cambridge. He was a student at St. Bartholomew's Hospital, London, qualifying in October, 1915, and immediately joined the R.A.M.C.

Captain F. L. Cleland, R.A.M.C., was educated at Queen's University, Belfast, qualifying early in 1915, and shortly after joining the R.A.M.C. He was a well-known international hockey and Rugby football player.

Died.

Lieutenant-Colonel P. C. Gabbett, I.M.S., was a student at St. Thomas's Hospital, London, qualifying in 1891, and was for some time Professor in Surgery at Madras Medical College.

Accidentally Drowned.

Captain E. A. Bell, R.A.M.C., was a student of King's College, London, and qualified in 1902. He was in practice at New Brighton, Cheshire, before joining the R.A.M.C.

Wounded.

Captain F. C. Barnes, R.A.M.C., attached to the Royal Lancaster Regiment.

Captain C. G. Scott, R.A.M.C., attached to the Lancashire Fusiliers.

Captain F. N. Walsh, R.A.M.C., attached to the Royal Warwickshire Regiment.

Captain J. R. M. Whigham, R.A.M.C., attached to the East Lancashire Regiment.

Captain A. C. Haddow, R.A.M.C., attached to the Duke of Wellington's Regiment.

Lieutenant M. C. Bridgman, R.A.M.C., attached to the Border Regiment.

Lieutenant L. M. Ingle, R.A.M.C.

Lieutenant-Colonel C. H. Hawkins, R.A.M.C.

Captain F. A. Roddy, R.A.M.C., attached to the Royal Inniskilling Fusiliers.

Captain J. M. Elliott, R.A.M.C.

Captain J. W. N. Roberts, R.A.M.C., attached to the East Lancashire Regiment.

Missing.

Captain V. D. O. Logan, R.A.M.C., attached to the Suffolk Regiment.

Captain R. B. Lucas, R.A.M.C., attached to the Norfolk Regiment.

Prisoner of War.

Captain F. S. Park, Canadian A.M.C., attached to the Canadian Mounted Rifles.

Believed to have been taken Prisoners of War at Kut-al-Amara.

Captain P. B. Bharucha, I.M.S.
Captain E. G. S. Kane, R.A.M.C.
Captain W. L. E. Fretz, R.A.M.C.
Lieutenant P. E. O'Donoghue, Indian Subordinate Medical Department.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war :—

Lieutenant G. H. W. Holman, Wiltshire Regiment, son of Dr. H. J. Holman, of Eastbourne.

Second-Lieutenant D. F. Don, Sherwood Foresters, son of Surgeon-General Don, A.M.S., of Canfield-gardens, London.

Captain J. M. Stack, North Staffordshire Regiment, second son of Major E. C. Stack, R.A.M.C., of Burton-on-Trent.

Second-Lieutenant E. E. Trevor-Jones, Rifle Brigade, elder son of Major E. J. Trevor Cory, R.A.M.C. (T.F.), of Cardiff.

Captain J. C. Rix, R.A.M.C., attached to the Yorks Regiment, third surviving son of the late Mr. W. H. Rix, M.R.C.S., of Tunbridge Wells.

Lieutenant and Adjutant R. R. S. Shaw, North Staffordshire Regiment, only son of Dr. T. D. S. Shaw, of Lichfield.

Captain V. G. Duke, Royal Garrison Artillary, second son of the late Colonel A. W. Duke, R.A.M.C., of Tunbridge Wells.

Major A. F. Hess, West Yorkshire Regiment, eldest son of the late Dr. A. Hess.

Captain R. N. Murray, Royal Inniskilling Fusiliers, only son of Mr. G. M. P. Murray, F.R.C.S., of Dublin.

Lieutenant G. M. Dawson, King's Liverpool Regiment, second son of the late Dr. T. M. Dawson, of Liverpool.

Lieutenant M. Stevens, Worcestershire Regiment, youngest son of Dr. A. F. Stevens, of Seaford, Sussex.

Captain T. H. Watts, Middlesex Regiment, son of the late Dr. F. Watts.

Second-Lieutenant G. Wiglesworth, Royal Flying Corps, only son of Dr. J. Wiglesworth, of Winscombe, Somerset.

Captain E. A. Bell, R.A.M.C., son of the late Mr. W. Bell, M.R.C.S., J.P., of New Brighton.

Captain G. O. Maw, R.A.M.C., son of Dr. G. Maw, of Shortlands, Kent.

Second-Lieutenant I. A. S. Scott, King's Own Scottish Borderers, youngest son of Dr. W. S. Scott, of Withington, Manchester.

Lieutenant J. A. A. Fountain, King's Own Yorkshire Light Infantry, second son of Dr. E. O. Fountain, of Ruislip, Middlesex.

Lieutenant W. G. Millar, East Yorkshire Regiment, eldest son of Dr. W. Millar, of Welton, Brough, East Yorkshire.

Lieutenant W. R. Wilson, R.A.M.C., attached to the Seaforth Highlanders, only son of Dr. W. Wilson, of Forest Hill, S.E.

Captain L. D. Head, King's Own Yorkshire Light Infantry, younger son of Dr. F. T. J. Head, of Riverside, Staines, Middlesex.

Captain H. W. Meade, Royal Sussex Regiment, youngest son of the late Dr. W. Meade, of Alverstoke, Hants.

Lieutenant-Colonel C. C. Macnamara, Royal Irish Rifles, eldest son of Mr. N. C. Macnamara, F.R.C.S., of Chorley Wood, Herts.

Midshipman L. J. Bidwell, R.N., eldest son of the late Mr. L. A. Bidwell, F.R.C.S., of Upper Wimpole-street, London.

Lieutenant A. E. Spencer, Sherwood Foresters, only son of Dr. E. M. Spencer, of Builth Wells, Radnorshire.

MENTIONED IN DESPATCHES.

The names of the following medical men are mentioned in despatches received from General Sir Charles Monro, dealing with the operations of the Mediterranean Expeditionary Force, and from General Sir John Nixon, dealing with the operations in Mesopotamia under the command of Major-General C. V. F. Townshend, C.B., D.S.O. :—

General Sir Charles Monro's List.

General Headquarters Staff, &c.—Lt.-Col. A. R. Aldridge, C.S.I., R.A.M.C., Res. of Off.; Surg.-Gen. W. G. A. Bedford, C.M.G.; Lt.-Col. H. A. Bray, R.A.M.C.; Col. E. C. Freeman (T.F.), Maj., ret. pay; Lt.-Col. T. P. Jones, R.A.M.C.; Lt.-Col. (temp. Col.) A. E. C. Keble, R.A.M.C.; Col. R. H. Luce, V.D. (T.F. Res.); Surg.-Gen. W. G. Macpherson, C.M.G.; Col. C. C. Reilly, late R.A.M.C.; Maj. (temp. Lt.-Col.) W. M. B. Sparkes, R.A.M.C.; Surg.-Maj. C. Farrant, W. Som. Yeo.; Surg.-Maj. R. L. Fitzgerald, E. Lancs. Reg.

Royal Army Medical Corps.—Lt.-Col. B. Forde, C.M.G.; Lt.-Col. L. Humphry; Lt.-Col. T. C. MacKenzie, D.S.O.; Lt.-Col. G. St. C. Thom; Temp. Col. W. H. Willcox; Maj. E. H. Cox, 3rd E. Lancs. Fd. Amb. (T.F.); Maj. W. Jones; Maj. (temp. Lt.-Col.) R. R. Lewis; Maj. (temp. Lt.-Col.) C. H. Lindsay, C.M.G., West Lancs. Fd. Amb. (T.F.);

Maj. (temp. Lt.-Col.) A. McMunn; Maj. A. W. Moore, 2nd S. Midland Bde. Fd. Amb. (T.F.); Temp. Maj. (temp. Lt.-Col.) H. Richardson, Scottish Horse Mtd. Bde. Fd. Amb. (T.F.); Capt. J. Anderson; Capt. R. G. Archibald; Capt. (temp. Maj.) H. S. Beadles, London Mtd Bde. Fd. Amb. (T.F.); Capt. J. A. Bennett; Capt. L. C. Bruce (T.F.); Capt. (temp. Maj.) E. T. Burke, Spec. Res.; Capt. T. S. Eves; Capt. J. F. Farrow (T.F.); Capt. E. D. Gairdner (T.F.); Capt. A. Graham (T.F.) (died of wounds); Capt. (temp. Maj.) C. Lovell (Spec. Res.); Capt. W. Mathieson; Capt. H. F. Panton; Capt. R. Robeson, Surg.-Capt. W. T. Rowe; Capt. L. R. Shore; Capt. O. Teichmann (T.F.); Capt. W. T. Torrance, 1st S. Midland Bde. Fd. Amb. (T.F.); Temp. Capt. G. S. Blandy; Temp. Capt. A. Bremner; Temp. Capt. E. R. G. Greville; Temp Capt. T. E. Hammond; Temp. Capt. F. Harris; Temp. Capt. W. H. Laslett; Temp. Capt. M. A. Macdonald; Temp. Capt. W. N. Rishworth; Temp. Lt. C. T. Galbraith; Temp. Lt. E. C. Mackay; Lt. (temp. Maj.) L. M. V. Mitchell, Highland Mtd. Bde. Fd. Amb. (T.F.); Temp. Lt. G. Walker.

Royal Navy.—Surg. W. Bradbury, R.N. (*Hawke* Bn.).

Medical Units.—Surg. J. H. Burdett, R.N.; Staff-Surg. E. B. Kenny, R.N.; Temp. Surg. C. F. Mayne, R.N.; Temp. Surg. C. H. S. Taylor, R.N.; Temp. Surg. M. Onslow-Ford, R.N.; Temp. Surg. G. Hamilton, R.N.

Australian Army Medical Corps.—Lt.-Col. A. H. Sturdee, C.M.G., V.D.; Lt.-Col. C. T. C. de Crespigny; Maj. G. W. Barber; Maj. A. Y. Fullerton, 2nd Bn.; Capt. E. T. Brennan, 11th Bn.; Capt. A. V. Honman; Capt. J. J. Black, 6th Bn.; Capt. (temp. Maj.) R. A. Campbell; Capt. H. V. P. Conrick; Capt. C. W. Thompson, 1st Bn.

Canadian Army Medical Corps.—Col. J. A. Roberts; Lt.-Col. E. G. Davis, C.M.G.; Lt.-Col. E. J. Williams.

Indian Medical Service.—Maj. W. R. Battye, D.S.O.; Maj. N. S. Wells; Capt. T. J. C. Evans; Capt. G. S. Husband, 9th Bhopal Infantry; Capt. C. J. Stocker.

Indian Subordinate Medical Department.—Sen. Assist. Surg. Bhagwan Singh (attached 14th King George's Own Ferozepore Sikhs); 1st Cl. Sub-Asst. Surg. Daulat Singh (attached 21st Kohat Mountain Battery); 954 1st Cl. Sub-Asst. Surg. Ajudhya-parshad Misir (137th I.F.A.); 1st Class Sub-Asst. Surg. E. Abraham; 1062 1st Class Sub-Asst. Surg. Muhammad Hussain (108th I.F.A.); 1115 1st Cl. Sub-Asst. Surg. Ishar Singh (108th I.F.A.); 1128 2nd Cl. Sub-Asst. Surg. Shankar Lal (35th Sikhs); 1391 3rd Cl. Sub-Asst. Surg. Hasan-Din Dar (108th I.F.A.); 1393 3rd Cl. Sub-Asst. Surg. Hari Chand (Bannu Brigade); 3rd Cl. Sub-Asst. Surg. S. B. W. Murphy.

General Sir John Nixon's List.

Medical Services.—Maj. E. V. Aylen, R.A.M.C.; Maj. E. F. E. Baines, I.M.S.; Maj. C. H. Barber, I.M.S.; Capt. S. J. Barry, R.A.M.C.; Capt. P. B. Bharucha, D.S.O., I.M.S.; Lt.-Col. H. O. B. Browne-Mason, R.A.M.C.; Capt. A. S. Cane, R.A.M.C.; Capt. J. A. Cruickshank, I.M.S.; Lt.-Col. J. F. Donegan, C.B., R.A.M.C.; Col. P. Hehir, C.B., I.M.S.; Lt.-Col. J. Hennessy, C.B., R.A.M.C.; Maj. F. C. Lambert, R.A.M.C.; Capt. R. K. Mallam, R.A.M.C.; Capt. A. T. J. McCreery, R.A.M.C.; Capt. K. K. Mukerji, I.M.S.; Capt. L. Murphy, R.A.M.C.; Maj. W. MacM. Pearson, I.M.S.; Capt. M. L. Puri, I.M.S.; Maj. C. C. C. Shaw, I.M.S.; Lt. W. C. Spackman, I.M.S.; Capt. J. Startin, R.A.M.C.; Maj. C. H. Watson, I.M.S.; Capt. G. Wilson, R.A.M.C.

Indian Subordinate Medical Department.—1st Cl. Asst. Surg. N. P. Shemain; 3rd Cl. Asst. Surg. E. A. Cotton; 3rd Cl. Asst. Surg. D. L. Mackay; 4th Cl. Asst. Surg. A. E. A. Phaure; 4th Cl. Asst. Surg. S. A. De Souza; 4th Cl. Asst. Surg. F. H. J. Rowley, Gen. List; 4th Cl. Asst. Surg. M. J. Nicholas; 4th Cl. Asst. Surg. E. B. Holt; 1st Cl. Sub-Asst. Surg. Reuben Benjamin; 1st Cl. Sub-Asst. Surg. A. D. Dul Basit; 1st Cl. Sub-Asst. Surg. Mitthu Lal; Sub-Asst. Surg. D. V. B. Butt; 1st Cl. Sub-Asst. Surg. Kesar Singh.

The name of Surgeon J. P. Berry, R.N., is mentioned in an Admiralty despatch dealing with sea patrol work for his services in the action between H.M.S. *Alcantara* and the German commerce-raider *Greif*, which resulted in the enemy vessel being sunk, in February last.

THE CENTRAL MEDICAL WAR COMMITTEE.

Meetings of the Committee were held on Wednesday, July 19th, and the following day to consider appeals for exemption from military service.

It was agreed to remit to the Executive Committee a suggestion that a list of the medical men who have gone on active service during the previous week should be sent to the medical journals for publication, the list being classified according to areas.

The Committee of Reference of the English Royal Colleges.

The work of the Committee of Reference of the English Royal Colleges in assisting the Central Medical War Committee has been of great value; a difficult and delicate part of the labours of the central body has been much facilitated thereby. The constitution of the Committee of Reference, it will be remembered, is as follows: Dr. Frederick Taylor, Sir Rickman Godlee, Dr. W. Pasteur, Dr. Sidney Martin, Dr. H. G. Turney, Mr. W. F. Haslam, Mr. D'Arcy Power, and Mr. Charles Ryall, with Mr. Hallett as honorary secretary. The function of the Committee is to advise the Central Medical War Committee as to exemptions of medical men attached to the hospitals in the London County Council area, either as members of the honorary staffs, or as teachers, or as residents, who may be called up for service. The Committee of Reference has been able to keep in touch with the Central Medical Committee by means of a joint committee composed of Dr. Pasteur, Dr. Sidney Martin, Mr. Ryall, and Mr. Hallett (secretary), representing the Committee of Reference, and Dr. C. Buttar, Mr. T. Jenner Verrall, Mr. E. B. Turner, and Dr. Alfred Cox and Mr. Bishop Harman (secretaries), representing the Central Medical War Committee. By the deliberations of this jointly constituted body the Central Medical War Committee is placed in a position to acquire much preliminary information with regard to the suitability for commissions in the Royal Army Medical Corps of medical men attached to the staffs of hospitals and medical schools. The questions on which the Committee of Reference have been, and will be, able to guide the Central Medical War Committee are many of them of considerable complexity. For example, there is no known standard for the constitution of a general or special hospital, in accordance with which it can be stated that a staff of a certain number, assisted by residents of a certain number, is required for a certain number of beds. To some extent it may be said that no such pattern can exist, inasmuch as special hospitals have special requirements, and general hospitals vary largely in themselves—distance from the residential centre of the staff or association with a medical school, being, for example, two things which may entail an apparently large personnel. The Committee of Reference will make allowance for such things in dealing with the situation on general lines, if the information is freely given to them by the institutions concerned. This, we are certain, will generally occur, but it is a fact that the attitude of all hospitals in asking for exemption of their staffs has not been precisely similar, far more requests for exemption having come from some institutions than from others. Endeavours to treat such matters fairly will probably lead to some of the exemptions granted being granted only for short spaces of time. In this way opportunity will be afforded to consider the plight of institutions which assert themselves to have been unduly depleted.

SCOTTISH MEDICAL SERVICE EMERGENCY COMMITTEE.

At the monthly meeting of the Committee held in the Royal College of Physicians, Edinburgh, on July 15th, the convener reported that it was expected that the July contingent joining the R.A.M.C. would be about 100. The Register had been carefully gone over, and of the medical men in Scotland who, having qualified in 1896 or subsequently, were possibly under the age of 41, only 69 had failed to register their names as willing to accept a commission if called upon to do so. Their names had been transmitted to the military authorities.

THE ROYAL ARMY MEDICAL CORPS AND THE GREAT ADVANCE.

Early in the course of the fighting, in what will presumably come to be called the battle of the Somme, the Commander-in-Chief, Sir Douglas Haig, issued a Special Order of the Day, possessing the greatest significance to all our readers. The Order was read on parade to all medical units by instructions from the Deputy Directors of Medical Services, to whom it was addressed in these words:—

"The Commander-in-Chief directs me to convey to you, and through you to the directors and all concerned under them, his high appreciation of their hard work and the efficiency of arrangements for dealing with the medical aspect of the present situation."

This commendation from Sir Douglas Haig will be a legitimate source of gratification to all the medical profession. A preponderating part of the work of the Royal Army Medical Corps is necessarily being done by temporary or Territorial officers, serving under and with the Regular officers, so that the corps in its present state is as new as any part of our great Expeditionary Force. How highly the organisation and personnel of the corps must have been tried during the early days of the grand advance of the Allied Forces on the Western front can be measured to some extent by the casualty lists; and the fact that the number of wounded who will be in a brief space of time again with their fighting comrades is so very large forms a practical commentary upon Sir Douglas Haig's Order, proving that all details of collection, transport, and arrangement of the wounded proceeded swiftly and smoothly, despite the strain produced by the tremendous struggle. It should be added that helmets are, as we have said from the first would be the case, of the highest value in saving life.

OBITUARY OF THE WAR.

WALTER SEYMOUR ARMSTRONG, M.R.C.S. ENG.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain W. S. Armstrong, who was killed in France on May 31st at the age of 42 years, was the youngest son of the late Rev. William Armstrong, incumbent of St. Mark's, Dalston, and of Mrs. Armstrong of Twyford Lodge, Putney. He was educated at St. George's Hospital, taking the Conjoint Board qualification in 1903, after which he acted as assistant medical registrar at his own hospital. He subsequently went to Labrador and Newfoundland, where he was surgeon of St. Anthony's Hospital and surgeon in charge of the Indian Harbour Hospital and a magistrate. A fellow practitioner in Labrador, now at a casualty clearing station in France, writes of him: "Armstrong's keenness, his devotion to duty, and his thoughtfulness for the people, had greatly endeared him to all. His loss will be greatly felt in Labrador." Another medical friend writes of him: "Whilst his love for his profession was the dominating factor, he made himself universally popular in all circles, and his death has removed from the profession one who devoted his health and strength in its service." Towards the end of 1914 he applied for a commission in the R.A.M.C. and served first with the British Expeditionary Force in France in 1914–15, and then with the Mediterranean Force, returning to France in April last, where he remained until his death.

Captain Armstrong was a man of wide experience who had travelled much and who had a large circle of acquaintances. He married in 1905, Florence, daughter of the late Mr. Ralph Tunnicliffe, of Leigh, Lancashire, who survives him.

KENNETH HARRISON ALLOA KELLIE, M.A., M.B., B.C. CAMB., M.R.C.P. LOND.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain K. H. A. Kellie, who was killed in action on June 25th, aged 41, was the youngest son of the late George Kelly, of Sutherland-avenue, W., and Shanklin, Isle of Wight, and brother of Lawrence Kellie, the composer. He was educated at Westminster School, Caius College, Cambridge, and St. George's Hospital, also studying in Paris, New York, and Boston. He qualified as M.R.C.S. and L.R.C.P. Lond. in 1903, M.B. Camb. in 1905, and M.R.C.P. Lond. in 1908. After holding the posts of clinical assistant for out-patients at Paddington Green Children's Hospital, assistant house surgeon at St. George's Hospital, and house physician at the Victoria Hospital for Children, he was appointed in 1908 assistant physician at the Belgrave Hospital for Children, and in 1912 full physician. He was also assistant physician at the Royal Hospital for Diseases of the Chest, City-road, and medical registrar of the Prince of Wales's Hospital, Tottenham. Besides his medical work, he took an interest in the public life of his borough, being a member of the St. Pancras borough council and chairman of its public health committee, and a prominent member of the West St. Pancras Conservative and Unionist Association.

At the beginning of the war he served as a special constable, but in April last year he gave up his work in London and took a temporary commission as lieutenant in the R.A.M.C., and was promoted captain on completing a year's service. Originally Captain Kellie was attached to the Guards' Brigade, but on his return to the front last April he was transferred to the Canadian Contingent as second senior medical officer. He was a well-known oarsman, and stroked the London Rowing Club boat at Henley and other regattas. Captain Kellie was a sound, practical physician who devoted much time and patience to his work. He was an excellent colleague in every way—amiable, cheerful, and always willing to help to the best of his ability. He will be very greatly missed by his friends, his colleagues, and his patients.

GEORGE HARRY MELVILLE DUNLOP, M.D., F.R.C.P. EDIN.,

MAJOR, ROYAL ARMY MEDICAL CORPS.

Major G. H. M. Dunlop, who died at a Red Cross hospital in France on July 3rd, at the age of 57 years, was the son of the late James Usher Dunlop. He was educated at the Edinburgh Collegiate School and Edinburgh University, graduating in 1880.

His first appointment was as house surgeon to Leith Hospital, and he afterwards held a similar appointment at the Sick Children's Hospital, Edinburgh, and was later clinical assistant in the skin and gynæcological wards of Edinburgh Royal Infirmary. Major Dunlop was physician to the Royal Blind Asylum, senior physician to the Royal Hospital for Sick Children, an appointment which carried with it a lecturership on diseases of children in the University, and was also examiner in medicine and in diseases of children at the Royal College of Physicians of Edinburgh, to the Council of which he was elected when comparatively young. About a year ago he left for France, as a major in the Royal Army Medical Corps, in company with Professor Alexis Thomson, of Edinburgh University, to take charge of the medical side of a general hospital. He did important work in different places in France until his untimely death as a result of pneumonia after a short illness.

Major Dunlop had made numerous contributions to medical literature, the most important being a report on 500 cases of pneumonia in children. He was a good teacher; his clinical lectures were excellent in substance and made attractive to students by lucid exposition and the lecturer's practical knowledge of his subject. Major Dunlop took an active part in medical affairs in Edinburgh, combining with strong personal likes and dislikes a broad-minded view of the subjects he discussed. He is spoken of by his colleagues as a good friend, a pleasant companion, and a trusted physician who will be greatly missed by both patients and friends. He leaves a widow and a son and daughter.

LORD KITCHENER NATIONAL MEMORIAL FUND.—No more fitting way of commemorating Lord Kitchener's name could have been devised than the creation of a fund on behalf of officers and men of the Royal Navy and Army who have been disabled or rendered needy by the war. The scheme for which the Lord Mayor of London seeks support is to be retrospective and perpetual, and will be a source to which the disabled officer or man can look for relief after the war when immediate relief schemes are over and forgotten. Donations should be sent to the Lord Mayor at the Mansion House.

THE PRACTICES OF ABSENTEE MEDICAL OFFICERS.

We outlined briefly a fortnight ago the circumstances which have to be taken into account in any scheme designed to conserve for their owners the private practices of members of the medical profession who have accepted or are accepting commissions in the Royal Army Medical Corps. The subject is one which has been always in the mind of both the Central Medical War Committee and the British Medical Association, and a fortnight ago a scheme was laid before the former body for the institution of Local Committees to whom there should be submitted any agreement under which an absentee medical practitioner could contract with the deputy for carrying on his work to the advantage of all concerned, practitioners and public. We pointed out that no one scheme could exactly fit all kinds of practice, every medical man's practice being to some extent an individual affair requiring individual treatment if its preservation and cultivation were to be of the best.

The Central Medical War Committee had several schemes under close consideration, each of which was likely to meet with acceptance in some areas, but not to meet the approval of practitioners in others. It now draws attention to the following general principles which it considers to be of great importance :—

(*a*) No scheme will be satisfactory which has not behind it (i.) the goodwill of the men who are to work it; (ii.) the confidence of the men who are going on active service; (iii.) the strong moral support of the L.M.W.C. This presupposes that the scheme has been fully discussed at a meeting of the whole local profession.

(*b*) It is preferable that there should be a legal agreement between the absentee and his deputy or deputies, though it is recognised that this may be impracticable in some cases.

(*c*) The L.M.W.C. should in such an agreement be vested with the power of dealing with any disputes that may arise between the absentee and his deputies, the decision of the Committee to be binding; the Committee should also have the power of appointing another deputy in case of need.

(*d*) Any such agreement should contain a provision whereby the absentee is indemnified against all acts of negligence committed by the deputy.

(*e*) The scheme and agreement should in all cases bind the deputies to refuse to act as the medical attendant of the patients they have attended for the absentees until a specified time (one or two years) after the absentee's return.

In September, 1915, the Central Medical War Committee issued a circular (W. 3) dealing with this subject. It was indicated that the men going on active service had a right to expect that their interests would be protected by those who remained at home, and it was suggested that where a locum tenens could not be provided the work should be done by a division of the money earned by the practice of the absentee on the following lines: (*a*) Town practices—an equal division of the proceeds between the absentee and his deputy or deputies; (*b*) combined town and country practices—probably three-eighths to the absentee and five-eighths to the deputy, the latter paying the expenses; (*c*) country practices where travelling expenses are important—a quarter to absentee, three-quarters to the deputy.

The first agreement of a legally binding nature brought to the notice of the Central Medical War Committee was drawn up in Holland (Lincs.) area and embodies the suggestions made in Circular W. 3, with the addition of a clause to protect the interests of a practitioner who dies on service. The clause runs as follows :—

In the event of the death of a practitioner on service his practice shall be carried on for one year after that date, or until his representatives give notice to one or more of the practitioners at home that they have disposed of his practice, whichever shall first happen, and, in the meantime, the representatives of the deceased practitioner shall be entitled to receive and shall be paid the same remuneration as the deceased practitioner would have been entitled to if he had during such time continued to be a practitioner on service.

The following is a detailed scheme which has received a certain amount of support, and which is published by the Central Medical War Committee for comment. It is a scheme formulated by Dr. T. Campbell, of Wigan, and has met with a good deal of support in Lancashire It embodies a novel method of arriving at an equitable remuneration, although the result is roughly the same as the equal division of proceeds between absentee and deputy in a town area suggested in circular W. 3. The scheme regards as essential that the absentee shall in all cases appoint a deputy or deputies who shall be responsible for the whole of the practice. There are points in this scheme that may commend it particularly to Local Medical War Committees in industrial areas.

Scheme for the Care of the Practices of Medical Men on Whole-time Military Service.

1. Any medical man deciding to take up a commission or being called up for ordinary military service (hereinafter referred to as the absentee) to at once give notice to the Committee referred to in paragraph 18 hereof, and such notice shall signify whether the absentee has made arrangements with a medical practitioner or practitioners (hereinafter called the deputy) to carry on his practice in his absence, and if arrangements have been so made the name or names or address or addresses of such practitioner or practitioners.

2. If at the date of the said notice the absentee has not made arrangements with a deputy he should, as soon as he has so done, forward to the same Committee the name and address of the deputy.

3. If the absentee fails to appoint a deputy then the said Committee, on the request of the absentee or of his wife or other authorised representative, can make an appointment. The authorised representative of the absentee shall be given power of attorney to act on his behalf.

4. The remuneration of the deputy to be agreed as by the absentee, but in case no arrangement as to remuneration is made or in case of an appointment by the said Committee the remuneration to be on the following scale—namely, £1 1*s.* per week for every £100 gross receipts of the practice during the 12 months ending Dec. 31st immediately preceding the deputy's appointment, with a maximum weekly remuneration of £12 12*s.* and a minimum of £3 3*s.* The said remuneration to be readjusted every six calendar months in accordance with the scale fixed by this paragraph on the gross receipts for the 12 months preceding the date of readjustment. Any fees payable by the Army authorities to the absentee for any appointment held by him shall not be included in the gross receipts of the practice during the preceding 12 months unless the work of such appointment be taken over and carried out by the deputy.

5. The deputy to defray out of his remuneration all the working costs and expenses of the absentee's practice, except the rent, rates, and taxes of the absentee's main and branch surgeries.

6. The deputy to keep each day a strict account of his visits, consultations, dressings, operations, and medicines, with the names and addresses of the patients on whom attendance is made, by entering same up in absentee's day book differentiating between private patients and panel patients (if necessary), and to leave such day book open to inspection of the absentee's wife or other representative, who must enter same into ledger at least once a week.

7. The record cards of panel patients to be accurately kept by the deputy.

8. The deputy to keep an accurate account of all monies received by him on account of the absentee's practice, and to hand such monies to the absentee's wife or his other representative on the first of each calendar month. Any clerical work connected with the absentee's practice other than that necessitated by paragraphs 6, 7, and 8 hereof to be done by the absentee's wife or other representative at the absentee's expense.

9. Cards to be exhibited in the surgeries (main and branch) of both deputy and absentee, clearly stating that the absentee is away on active service and that the deputy is attending to absentee's practice, and requesting the patient to inform the deputy that he is a patient of the absentee.

10. As far as conveniently possible the patients of the absentee to be seen at the surgeries of the latter, and the deputy to hold a surgery daily at the absentee's main surgery.

11. The absentee before leaving his practice to make out a list of his private patients, with their addresses, and to submit such list to the deputy, and such list unless questioned within 14 days by the latter to be final evidence that the patients whose names appear on that list are the private patients of the absentee. A copy of such list to be forwarded by the absentee to the said Committee.

12. Proper and accurate accounts of the absentee's practice to be sent out by the absentee's wife or other representative in the name of the absentee, with a request that cheques be drawn in favour of the absentee.

13. All accounts of the gross receipts of the absentee's practice to be kept by the absentee's wife or other representative and to be open to the inspection of the deputy or his representative on request at any reasonable hour of the day.

14 The absentee should be indemnified against all claims, demands, or actions arising out of the negligence or wrongful act or default of the deputy. (It is deemed advisable that absentee and deputy be members of a protection society and insured against damages.)

15 Subject to the provisions of the next clause the deputy to give six calendar months' notice of his intention to resign to the absentee's wife or other representative, and also to the said Committee, whereupon in the absence of an appointment being made by the absentee or his wife or other representative of a fresh deputy the said Committee to make an appointment.

16. In case the absentee die or be killed or return home, but incapable of attending to his practice, the deputy to continue to attend to the absentee's practice for at least a period of 12 months after the date of such death or of such return home, as the case may be, or until the absentee's practice is disposed of by sale, the deputy during this period to continue to receive remuneration as provided in paragraph 4. The deputy to give every facility and information to an intending purchaser.

17. The deputy shall not attend or otherwise professionally advise or treat any of the patients on the list referred to in paragraph 11 hereof for a period of one year after the deputy has ceased to carry on or otherwise to be associated with the practice of the absentee.

18. A Committee to be formed by the practitioners of the district (or, if thought advisable, the Local Medical War Committee), and to have relegated to it by the agreement entered into by the absentee and deputy such powers as will permit it to deal with all disputes of whatsoever nature arising between the absentee and the deputy in regard to any question affecting the absentee's practice or the carrying on of the same by the deputy, and the decision of such Committees to be binding on both parties.

The view of the Central Medical War Committee agrees with our previously expressed conclusion that it is not possible to embody in one, or even two or three, detailed schemes plans likely to meet with acceptance in every areas It is, however, hoped that the public ventilation of the subject will lead to the possibility of sensible arrangement, being made by Local Committees, which, while identical in general principles, will differ in details according to the wants of the locality.

ARRANGEMENTS FOR ARRIVAL OF THE WOUNDED IN MANCHESTER.

It would obviously be impossible for us to publish anything like a detailed statement concerning the casualties incurred in the great advance, but we may say that the account given by our Manchester correspondent tallies in its fortunate features with other information in our possession. He writes :—

"'Cot' and 'sitting-up' patients, amongst the first to leave the trenches after the artillery bombardment on July 1st, reached Manchester on July 8th. Some of the wounded had been fighting for three or four days. Their wounds were caused for the most part by machine-gun fire and shrapnel. Replying to an observation that many of them were wounded in the legs and feet, a soldier with a badly bruised head, the result of shrapnel, said: 'Nearly all the leg and feet wounds were received in the first 150 yards advance. The German machine-guns, when trained upon us, were fired from the trenches, so that the muzzle of the gun would be on the ground level and the bullets would sweep across our front only a few inches from the ground." The majority of the cases of injury were comparatively slight. Infantry cases predominate amongst the wounded sent to Manchester. The expedition with which the wounded are detrained and placed in motor cars to be transported to hospitals at Stockport, Sale, Ashton, Withington, Fallowfield, and more distant centres is wonderful. One train of 'sitting-up' cases was emptied in eight minutes, and within half an hour the wounded were receiving the necessary attention in the hospitals. As a rule about one hour is required for the evacuation of a full ambulance train with mixed cases. Trains brought some of the men who took part in the fighting for Contalmaison only three days previously. Up to the present a portion of the accommodation of the General Hospital in Whitworth-street has been reserved for officers. Since wounded began to arrive from the regions of the Ancre and Somme viâ Southampton, the General Hospital in Whitworth-street and the hospitals in High-street and Worsley Hall have been reserved exclusively for officers."

FREEMASONS' WAR HOSPITAL.—The Masonic Nursing Home Committee, having secured the premises of the Chelsea Hospital for Women, have given it as a fully equipped military hospital to the War Office through the Red Cross Society. A circular letter, signed by the Lord Mayor of London and others, has been issued for funds to carry out the project, the belief being expressed that the brethren will welcome the opportunity of identifying the craft with an important and beneficent work. The hospital will be fully equipped on modern lines and will provide 50 to 60 beds. It is hoped to open the premises within the next few weeks, and the Medical Advisory Committee is advertising for the services of a competent resident medical officer. After the war it is intended to transform the hospital into a permanent nursing home. The address of the Masonic Nursing Home Committee is 8, Craven House, Kingsway, W.C.

VOLUNTARY AID DETACHMENTS.—A report from a county secretary indicates that the demand for members of Voluntary Aid Detachments is likely to greatly increase during the next few months. Fortunately requirements were foreseen early in the war, with the result that the personnel was raised from 2711, the figure at which it stood at the close of 1914, to 7125 at the end of last year. But recruits are now obtained with difficulty, owing to the large demands for women workers from different quarters and also, it is thought, to the great delay that occurred in employing members after warning them to hold themselves in readiness for service. A further reason is probably to be found in the kind of work on which members are generally employed.

Dr. J. A. Turner, executive health officer of Bombay, is acting as a temporary captain in the Royal Army Medical Corps while on leave, being detailed as specialist sanitary officer for the Northern Command. Dr. Turner had the honour of being presented to His Majesty the King and being invested with the Order of C.I.E. at Buckingham Palace on July 11th.

Medical News.

UNIVERSITY OF LONDON.—At the Second Examination for Medical Degrees, Part II., held recently, the following candidates were successful :—

Wilfred Mark Anthony, St. Thomas's Hospital; †Marjorie Back, London (Royal Free Hospital) School of Medicine for Women; Norman Dyer Ball, University College; Thomas George Doughty Bonar, Guy's Hospital; Jacob Brodetsky, London Hospital; Kathleen Mary Cogan, London (Royal Free Hospital) School of Medicine for Women; Andrew Norman M. Davidson, King's College; Thomas Davies, University College, Cardiff, and University College; Abraham Eidinow, London Hospital; Sylvia Victoria Elman and Gwenvron Mary Griffiths, London (Royal Free Hospital) School of Medicine for Women; Lawrence Handy and †Christopher Langton Hewer, St. Bartholomew's Hospital; Clifford Venning Isard and Myrddin Emrys Jones, St. Thomas's Hospital; Vivian Emrys Jones, University of Liverpool; Ernest Francis Kerby, Guy's Hospital; Maurice Laurent, University College; Simon Sally Liebermann, James Galway McCann, and Douglas McClean, St. Thomas's Hospital; Farid Morcos, St. Mary's Hospital; Gordon Frank Peters, Guy's Hospital; Ruth Wade Plimsoll, London (Royal Free Hospital) School of Medicine for Women; Montagu Cecil Polhill, University College; Leonard Duncan Porteous, St. Bartholomew's Hospital; Percival George Quinton and Walter Ernst Karl A. Quitmann, University College; Ronald Seton Ralph, Guy's Hospital; Jessie Craig Ritchie, London (Royal Free Hospital) School of Medicine for Women; Edward Snow Rose, St. Bartholomew's Hospital; William Henry Simmons and Herbert William Southgate, Guy's Hospital; Victor Alexander Trevor Spong, St. Bartholomew's Hospital; Mary Sylvia Stocks, London (Royal Free Hospital) School of Medicine for Women; Norman Beattie Thomas, St. Bartholomew's Hospital; and Robert Walter Warrick and Sik To Wong, Guy's Hospital.

† Distinguished in Physiology.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the quarterly examination in Practical Pharmacy held on July 6th and 7th the following candidates were successful :—

John Arnold Molony Alcock, Guy's Hospital; Keith Edward Attenborough, St Mary's Hospital; Douglas Albert Raoul Aufranc, Middlesex Hospital; Noel Arthur Hamilton Barlow, Guy's Hospital and private study; Mark Louis Barst, London Hospital; Alexander Herbert Bean and Hugo Boger, University College Hospital; Edward Victor Briscoe, St. Mary's Hospital; Anna Bridget Broman, Royal Free Hospital; Osmond Havman Brown, Charing Cross Hospital; Louis Ely Reginald Carroll, St. Bartholomew's Hospital; Marjorie Carnsew Chappel, Royal Free Hospital; Dudley Hugh Cockell, St. Bartholomew's Hospital; Walter Tyrrell Cooper, Charing Cross Hospital; Ignatius Joseph Cruchley, London Hospital; Leslie Perkins de Abrew, Ceylon Medical College and London Hospital; Mohammed Abdel Kader El Hennawy, St. Mary's Hospital; Cecil Weldon Empey, London Hospital; Harold Bert Flooks, University College, Cardiff; Barnett Goldfoot, St. Bartholomew's Hospital; Maxwell Hall, Guy's Hospital; Richard Hilliard, London Hospital; Alfred Kenneth Ince Jones, Middlesex Hospital; James Trevelyan Jones, University College, Cardiff; Walter Hewitt Jones, Cambridge University and St. Mary's Hospital; Mohammed Abdul Razzak Khalifa, Guy's Hospital and private study; Ronald William Lush, Oxford University and Middlesex Hospital; Oswald Edgar John McOustra, University College Hospital; Malati Madgavkar, Birmingham University; Noel Heathcote Seton Maelzer, Alfred Yaphet Masouda, Reginald Stanley Millar, and Joseph Octave Roger Montocchio, Guy's Hospital; Eva Morton, Royal Free Hospital; James Aird Morton, St. Bartholomew's Hospital; Arthur Richard Neckles, Guy's Hospital; Elizabeth O'Flynn, Royal Free and St. George's Hospitals; Arthur Gordon Ord, Guy's Hospital; Madeline Phyllis Parker, Royal Free Hospital; Jacobus Cornelis Pauw, London Hospital; Reuben Woodland Payne, Charing Cross Hospital; Thomas Melville Payne, University College, Cardiff, and St. Bartholomew's Hospital; Eugene Arthur Pearson, London Hospital; Betsey Porter, Royal Free Hospital; Clifford George Jackson Rayner, St. Bartholomew's Hospital; Constance Elizabeth Marlar Ridout, University College Hospital and private study; Edwin John Gostwycke Sargent, St. Bartholomew's Hospital; Herbert Henry Silley, University College Hospital; Maurice Oliver Simpson, Middlesex Hospital; Phineas Alex Smuts, St. Bartholomew's Hospital; George Ernest Spero, London Hospital; Percival Washington Symons, Middlesex Hospital; Guy Burford Tarring, Oxford University and Guy's Hospital; Harold Edwin Thomas, University College Hospital; Thomas Ben Thomas, St. Bartholomew's Hospital; Ralph Robert Traill, Cambridge University and Guy's Hospital; Albert Charles Zwaris Wijayaratne, University College Hospital; and James Harry Wiseman, Sheffield University.

UNIVERSITY OF GLASGOW.—The following candidates, graduates in Medicine and Surgery, received their degrees on July 19th :—

Bachelors of Medicine and Bachelors of Surgery (M.B., Ch.B.).—With Honours: Ernest M'Murchie Dunlop and David Campbell, M.A., B.Sc. With Commendation: Alexander Fisher M'Millan, Arnot Campbell Hepburn, George Carson Swanson, M.R.C.S. Eng., Kenneth John Talbot Wilson, and Samuel John Henderson. Ordinary Degrees: Thomas Blackwood, James Prowse Broom, Archibald Campbell Brown, John Alexander Buchanan, Winnifred Jane Crawford, John Williamson Dalglish, James Ferguson Duthie, James Ewing, Thomas Gray, Eduardo Guillermo Hall-Sánchez, Jean Lawrie Hamilton, Rollo Isbister, Oswald Johnston, Robert William MacDonald, Douglas Bower M'Intosh, John Wilson Maclean, Mary Ann MacLennan MacLean, Margaret Kay Mitchell, Robert Rodger, Mary Scott, John Steele, Arthur Raphael Steven, and John Banks Steven.

The following candidates have passed the examinations in Anatomy (A.) and Physiology (P.) for the degrees of Bachelor of Medicine (M.B.) and Bachelor of Surgery (Ch.B.):—

Carl Otto Anderson (P.), James Baird* (A., P.), Alexander Kidd Begg (A., P.), John William Stewart Blacklock (A., P.), Murdoch Brown (A., P.), James Caddies (A., P.), Alister Campbell (A., P.), James Gibson Campbell (A., P.), John Gilchrist Coltart (A., P.), Archibald Joseph Cronin (A., P.), Robert Fletcher, M.A. (A., P.), Colin Macphail Forbes (A., P.), Robert Adam Forsyth (A., P.), George Keith Fulton (A., P.), James Anthony Hamilton (A., P.), John Hewitt† (A., P.), Robert Gold Howat (A., P.), Robert Paterson Jack (P.), John Alexander Jenkins (A., P.), Samuel Hamow Wolf Kamerasse (A., P.), John Kirk, M.A., B.Sc. (A., P.), James Campbell Laurie (A., P.), Barnett Levine (A.), Robert M'Courtney (A., P.), Francis M'Donald (A., P.), Frederick M'Elwee (A., P.), Angus Maclean (A., P.), Joseph Patrick M'Millan (A., P.), Peter MacMurray (A., P.), Farquhar M'Vean (A., P.), Robert Mair (A., P.), John Mackean Maxton† (A., P.), Livingstone Mitchell (A., P.), Modiri Silas Molema (A., P.), James Bennie Morrison* (A., P.), William John Payne* (A., P.), John Pollock (A., P.), Peter Crawford Rankin (A., P.), David Reid (A., P.), Henry Alexander Ross (A., P.), William Howie Stevenson (A., P.), Noel Eustace Stonet (A., P.), Joseph Turner Taylor (P.), James Alexander Walls (P.), Robert Kennedy Watt (A.), John Whitelaw, M.A. (A., P.), and Stephen Young (A., P.).

Women.—Christine Calder Abernethy (A., P.), Grace Hay Anderson (A.), Susan Struthers Bryce (A., P.), Elizabeth Page Cameront (A., P.), Mary Turner Liddell Clark*† (A., P.), Emily Loudon Clow (A., P.) Veronica Catherine Jessie Davies (A., P.), Edith Dennistoun Dobbie (A., P.), Margaret Hogg Grant† (A., P.), Lillias Beverley Hardie (P.), Helen Hogg (A., P.), Elizabeth Smith Inglis (A.), Alice M'Elwee (A., P.), Alice M'Glashan (A., P.), Evelyn Christina M'Donald M'Gregor (A., P.), Mabel Mary Maclean (A., P.), Agnes Hislop Macwhirter (A., P.), Kathleen Nicol (A., P.), Margaret Mitchell Paterson (A., P.), Louisa Evelyn Pigeon (A. P.), Helen Lennie Ralston (A., P.), Katherine Octavia Robertson (A., P.), Jane Elder Shortt (A., P.), Elaine Bessie Stuart Stocquart (A., P.), Marion Thomson (A., P.), Lilian Jane Taylor White (A., P.), and Helen Barr Wilson (A., P.).

* Distinction in Anatomy. † Distinction in Physiology.

Medical Jurisprudence and Public Health.—Oswald Johnston, John Wilson Maclean, Angus M'Alpine Scott, and James Livingstone Walker.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW AND ROYAL COLLEGES OF PHYSICIANS AND SURGEONS OF EDINBURGH.—The examinations of the Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, and Royal Faculty of Physicians and Surgeons of Glasgow were concluded at Edinburgh on July 14th with the following results:—

FIRST EXAMINATION.

Edward James Allan, Andrew Smith Irving, Andrew Wood Smith, and Peter Edwin Malloch.

Physics.—Charles William de Villiers-Pritchard, Arthur William Hodder Noble, John Murray, and Albert George Rutherford Mackie.

Biology.—Albert George Rutherford Mackie.

Chemistry.—Sayed Chaleb and Arthur William Hodder Noble.

SECOND EXAMINATION.

Thomas Blaney, Gordon Spivey Woodhead, Hugh William Howatson, Mayberry Hugh Carleton, Thomas Ferguson Minford, Harold Gengoult Smith, and Buenaventura Ramirez.

Anatomy.—Jung Bahadur Singh.

Physiology.—Alise Fung-a-Ling.

THIRD EXAMINATION.

Bernard Malachy Lynam, Don Alfred Walpola, Daniel Cornelius Howard, William Brownlee Watson, Mahmoud Abdel Kader Mofreh, Donald Stewart, and William Fidler Mason.

Pathology.—Edward Digby Kinsey.

FINAL EXAMINATION.

The following candidates having passed the Final Examination were admitted L.R.C.P.E., L.R.C.S.E., L.R.F.P. & S.G.:—Thomas Downie Renwick, Shapoor Dinshaw Vania, Frank Bertram Macaskie, Maurice Andrew White, Arthur Leslie Giblin, Elfrida Hester Brooke Coghill, John Ross, John Edward Kitchen, and Ethel Mary Dukes.

Medicine.—John Berry and Robert Woodside.

Surgery.—Edwin Butler, Stanley Wall Hoyland, Robert Woodside, Paul Lucien Manuel, Reginald Vincent Clarke, and Edward Mervyn Lewis Morgan.

Midwifery.—Edwin Butler, John Berry, Iwan Davies, William McElroy, Edward Annequin, Paul Lucien Manuel, Reginald Vincent Clarke, Edward Mervyn Lewis Morgan, Phœbe Tripp, Harry Morley, and Owen Glendower Evans.

Medical Jurisprudence.—Edwin Butler, Paul Vertannes, Lloyd William Hughes, George Patrick de Silva, Benjamin Ajaji-Young, John Forbes Campbell, Spearman Charles Swinburne, and William Archibald Mein.

UNIVERSITY OF MANCHESTER.—The following gentlemen have obtained the Diploma in Public Health of the University of Manchester:—

Emor Reuben Cooper, M.B., Ch.B. Manch.; Harry Newbold Crossley, M.B., Ch.B. Manch.; Shon Walker MacLean, M.B., Ch.B. Edin.; and William Hartley Tattersall, M.B., Ch.B. Manch.

UNIVERSITY COLLEGE, LONDON.—The following awards have been made in the Faculty of Medical Sciences: Bucknill scholarship, J. P. Padshah; Epsom scholarship, D. C. Corry; medical entrance exhibition, H. L. Heimann and A. B. Saunders.

UNIVERSITY OF ST. ANDREWS: LICENCE IN DENTAL SURGERY.—Arrangements have been completed for the inauguration in October of dental classes which will lead up to the granting of a licence to practise dentistry. The course of study will be held at the University College, the Dental Hospital, and the Royal Infirmary, Dundee.

THE House of the Royal Society of Medicine, 1, Wimpole-street, London, W., will be closed for cleaning and library stock-taking during the whole of August.

A MIDWIVES BILL FOR IRELAND.—The movement to promote a Midwives Bill for Ireland on lines similar to the Acts in force in England and Scotland is continuing. We have already noted that at a recent meeting of the President and Fellows of the Royal College of Physicians of Ireland a resolution was passed in favour of such action. The Council of the Irish Medical Association has now taken the matter up, and in pursuance of a resolution of the general meeting is taking steps to form a conjoint committee representative of all branches of the medical profession for the purpose of drafting a Bill. The several medical societies and the two Royal Colleges have been asked to nominate representatives on this committee. The Local Government Board is understood to regard the present as an opportune moment to move, and that the prospects are favourable of an agreed Bill reaching the statute-book. The difficulty of drafting a measure satisfactory to everyone is borne in mind by the promoters, who hold that the English and Scottish precedents must not be followed too closely. Conditions of practice in Ireland are very special ones, particularly in country districts, and the position and responsibility of the Poor-law medical officer will require special consideration.

URGENT SURGICAL MATERNITY CASES.—Our Belfast Correspondent writes: I am pleased to announce that the City Corporation of Belfast, who possess an excellent motor ambulance service worked by the fire brigade, have now decided to rescind an absurd arrangement which prohibited the use of the ambulance for the removal to hospital of urgent surgical maternity cases occurring among the poor of the city. On giving notice in writing or by telephone at the chief fire station any medical practitioner may now obtain the use of the ambulance for such cases free of charge, on condition that they are suitably accompanied.

A public subscription has been started for the purpose of adding a wing, in the form of a complete ward unit for children, to the Nantwich (Cheshire) Infirmary, as a memorial to the late Canon W. H. Binney, who was vicar of the parish from 1886 to 1915.

Lieutenant-Colonel Francis Frederic Perry, C.I.E., F.R.C.S., has been appointed a Knight of Grace of the Order of the Hospital of St. John of Jerusalem in England.

Parliamentary Intelligence.

HOUSE OF COMMONS.

THURSDAY, JULY 13TH.

British Prisoners at Ruhleben.

Mr. MALCOLM asked the Under Secretary for Foreign Affairs whether he had received any reply to the last proposal to the German Government on the question of the treatment of British civilian prisoners at Ruhleben; and whether he could add anything to his last public statement with reference to this matter.—Lord ROBERT CECIL replied: The substance of the German reply which we have received is as follows: The German Government categorically repudiate the charge made by us, that they do not recognise their obligations as to the supply of food to British prisoners of war, as also the assertion that less food is supplied to civilian than to military prisoners, the rations furnished to all prisoners of war being identical. The report recently made by Dr. Taylor will be carefully verified and the result communicated in due course. In this latter connexion it is remarked that on the occasion of his visits to the camp kitchen Dr. Taylor frequently expressed to the officer in charge his appreciation of the quality of the food. The German Government state that they have at our request sanctioned the despatch to the captain of the camp at Ruhleben collective consignments of food for those prisoners who receive no direct parcels, on the condition that those consignments shall not contain a predominance of such commodities as are only obtainable to a limited extent by the German people themselves in consequence of the British blockade.

If, on grounds of reprisal, we should in any way reduce the rations now supplied to German prisoners of war in this country, the German Government propose not only to withdraw the permission for collecting parcels, but also to prohibit the receipt of individual parcels, the camp ration being then ordered so as to correspond with the measures taken by us. The German Government declare themselves as not averse to the proposal which we communicated to them for the release of all British civilian prisoners of war, but they consider that this could not take place on the basis of the release of a similar number of German prisoners by us, as such an exchange would encounter insuperable difficulties in regard to the selection of those prisoners who are to benefit by it. A further communication from us on the subject will now be awaited. To this note His Majesty's Government propose to reply that they cannot accept the proposal to repatriate all the Germans interned in this country in exchange for the British civilians interned in Germany, since that would be to send back some 26,000 Germans in exchange for only 4000 British. They have already proposed to the German Government that all civilians on both sides over 50 should be repatriated, and also all those over 45 who are unfit for service in the field, with the exception of certain persons to be retained for military reasons. This proposal they will once more press upon the German Government, with the addition that persons so retained shall not exceed 20 on each side. They further propose that the remaining British civilians and an equal number of German civilians shall be interned in a neutral country.

Sir W. BYLES: May we take it that the policy of reprisals is abandoned?—Lord ROBERT CECIL: No, sir, the House must not arrive at any such conclusion. The Government hold themselves perfectly free to retaliate if that proves to be the only way of obtaining justice for our prisoners.

Mr. BUTCHER: What is the number of British civilian prisoners in Germany as compared with the number of interned Germans in this country?—Lord ROBERT CECIL: There are about 4000 interned British civilians and 26,000 interned Germans.

MONDAY, JULY 17TH.

Medical Arrangements in Mesopotamia.

Sir HENRY CRAIK asked the Secretary for India whether he would take any steps to procure the prompt production of the report by Sir W. Vincent, General Bingley, and Mr. Redesdale upon the medical arrangements for the Mesopotamian expedition and its presentation to Parliament.—Mr. CHAMBERLAIN replied: I have asked the Viceroy to expedite the consideration of the report by the authorities in India and to transmit it to me with their observations as early as possible.

Sir H. CRAIK: Is the right honourable gentleman aware that the contents of that report are already a matter of comment?—Mr. CHAMBERLAIN: That may be quite possible, but it ought not to be so, because the report only reached the Government of India a very short time ago, and has not been examined by them. When the last mail was written they had only just received it, and I myself have not yet got a copy.

Sir H. CRAIK: Could not a summary of the report and its chief recommendations be transmitted by telegraph?—Mr. CHAMBERLAIN: The report is the result of an inquiry into events in Mesopotamia in the past, of which I gave some account in the House early in this session. I think that it is right before the report is published that the Government of India should have an opportunity of examining it, and that the Government at home should have the same opportunity. I gather that my honourable friend's anxiety is lest anything should now be left undone which could be done to ameliorate the conditions. I am informed by the Viceroy that he has specifically put that question to Sir W. Vincent and General Bingley, and both have replied that there was now nothing to be done in anticipation of the full consideration of their report, and that they believed that everything possible was now being done.

Sir JOHN JARDINE asked the Financial Secretary to the War Office whether the provision of medical officers, ward orderlies, and nurses for the troops, British and Indian, at Basra and along the Tigris and Euphrates, was now sufficient for the requirements of war.—Mr. FORSTER answered: I am informed that all the demands which have been received by the War Office up to date have been complied with.

Army Medical Boards and Private Practitioners.

Mr. EDMUND HARVEY asked the Financial Secretary to the War Office whether his attention had been called to the action of certain Army Medical Boards in different parts of the country in passing over medical evidence submitted by civilian medical men and passing for general service, after brief examination, men who subsequently broke down under training; and whether he was taking steps to ensure that greater attention should be given by Army Medical Boards and military representatives to medical evidence from private medical practitioners, in the interests both of the Army and the men concerned.—Mr. FORSTER replied: The responsibility for the decisions taken by the recruiting medical boards of course rests with those boards, but they have been instructed to give due consideration to medical evidence submitted by civilian medical practitioners regarding the men who have been called up for service. It is not, I think, the case that there has been any general failure to do this, but in view of statements which have been made attention has been called to the point.

TUESDAY, JULY 18TH.

The Wounded from the Battle of Jutland.

Sir ARCHIBALD WILLIAMSON asked the Secretary to the Admiralty whether, after the battle of Jutland, wounded men landed at a naval base in the North were sent by rail to hospitals at Haslar and Chatham; whether a number died on the long railway journey; whether he was aware that on the day in question there were at least 50 beds vacant and held at the disposal of the military authorities within a short distance of the same naval base; and whether he would endeavour to make arrangements with the War Office to obtain temporary use of their unoccupied beds at the nearest suitable hospitals should such an emergency recur.—Mr. MACNAMARA answered: The condition of all the wounded landed after the battle of Jutland was carefully examined, and only those men were sent away by rail whose condition justified that procedure. It is not the fact that any of them died, nor is it believed that any of them suffered injury. The arrangements made by the Admiralty would have enabled them, had they thought it desirable, to have accommodated a larger number of patients in the neighbourhood of the landing-places than were actually wounded. There was therefore no emergency, as my honourable friend seems to suppose. The policy adopted was adopted deliberately by the Medical Department of the Admiralty partly in the interests of sound medical administration, partly for the convenience of men who preferred to be near their depôts and their homes.

Medical Arrangements in Mesopotamia.

In the course of a statement dealing with the campaign in Mesopotamia Mr. ASQUITH (Prime Minister) said: With regard to the medical provision for the sick and wounded soldier, Sir John Nixon, the general who was then in command at the end of last November after the action at Ctesiphon, in a report made to the Secretary of State for India from Basra, stated that in his opinion the medical arrangements had been satisfactory.

Sir EDWARD CARSON: Will that report be published?

Mr. ASQUITH: Yes. It will be published in time. It was a telegram to my right honourable friend. In the months of December and January my right honourable friend and other members of the Government received from various sources statements of an unofficial character which seemed to point to another and very different state of things, and accordingly, I think early in the month of February, the Government of India appointed a commission of inquiry consisting of highly competent persons, Sir W. Vincent, General Bingley, and Mr. Redesdale, who were sent to Mesopotamia and directed to investigate the whole of these matters fully, with the object, if possible, of attaching responsibility to those who were answerable for the failure to make due provision in these respects. That Commission went to Mesopotamia early in March, and spent something like two months in a thorough and exhaustive examination on the spot. Their report has now been received by the Government of India, who before transmitting it home have asked, and I think reasonably have asked, that General Sir Beauchamp Duff, the Commander-in-Chief in India, should be allowed to submit his observations upon it. But in reply to a question put to them by the Viceroy the Commissioners declared—the Viceroy having asked them if any immediate action was called for—that in the conditions which existed when they left Mesopotamia everything was now being done. Not satisfied with that, we also despatched from the War Office one of the most eminent medical officers in France, Surgeon-General O'Donnell, who went out early in May. He has made a report which shows in some respects that at that time there was still a shortage of necessaries, and every indication which he gave of deficiency has been peremptorily required to be made good.

WEDNESDAY, JULY 19TH.

Promotions in the Royal Army Medical Corps.

Answering Mr. JOYNSON-HICKS, Mr. FORSTER (Financial Secretary to the War Office) said that 155 regular Captains in the Royal Army Medical Corps had been promoted since the beginning of the war. The number of promotions in the Royal Army Medical Corps had not been fixed so as to bear a definite proportion to combatant promotions of similar ranks.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ALDREN, B. C. R., M.B., Ch.B. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Birmingham (North) District of the county of Warwick.

ARKLE, J. VERE, F.R.C.S. Eng., Surgeon to the Hôpital No. 132, France.

BRADY, MARGARET, M.B., B.S. Lond., to take charge of the Baby Clinic and Infant Welfare Scheme, under the Harrow Council.

LAUDER, HELEN, L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., Medical Officer to the Hyde Education Committee.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

ALTON, HANTS, LORD MAYOR TRELOAR CRIPPLES' HOSPITAL.—Assistant Resident Medical Officer.

BEDFORD COUNTY HOSPITAL.—House Surgeon, unmarried. Salary as arranged, with board, &c.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church-street.—Resident Surgeon. Salary £200 per annum, with board, &c.

BIRMINGHAM UNIVERSITY.—Lecturer in Physiological Department. Salary £200 per annum.

BOLTON INFIRMARY AND DISPENSARY.—Female Second House Surgeon. Salary £200 per annum, with board, &c.

BRIGHTON, COUNTY BOROUGH ISOLATION HOSPITAL.—Resident Medical Officer. Salary £250 per annum, with board, &c.

BRISTOL ROYAL INFIRMARY.—House Surgeons and House Physicians. Salary at rate of £120 per annum, with board, &c. Also House Surgeon to Throat, Nose, and Ear Department. Also Female House Surgeon to Obstetric Department. Salary at rate of £120 per annum, with board, &c.

BUXTON, DERBYSHIRE, DEVONSHIRE HOSPITAL.—Assistant House Physician. Salary £100 per annum, with board, &c.

CARDIFF, KING EDWARD VII.'s HOSPITAL.—House Surgeon for six months. Salary at rate of £140 per annum, with board, &c.

CHARING CROSS HOSPITAL, Agar-street, W.C.—Resident Medical Officer. Salary £400 per annum.

CROYDON, COUNTY BOROUGH ISOLATION HOSPITAL.—Resident Medical Officer. Salary at rate of £250 per annum, with board, &c.

HELLINGLY, EAST SUSSEX COUNTY ASYLUM.—Locum Tenens Assistant Medical Officer for two months. Salary 6 guineas a week, with board, &c.

HUDDERSFIELD COUNTY BOROUGH.—Assistant School Medical Officer. Salary £300 per annum.

HULL, VICTORIA HOSPITAL FOR SICK CHILDREN.—Female House Surgeon. Salary £100 per annum, with board, &c.

ITALIAN HOSPITAL, Queen-square, W.C.—Pathologist.

LIVERPOOL, DAVID LEWIS NORTHERN HOSPITAL.—House Surgeon for three or six months. Salary at rate of £150 per annum, with board, &c.

LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W.—Assistant House Surgeon for six months. Salary at rate of 120 guineas per annum.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Parkplace, Cheetham Hill-road.—Female House Surgeon. Salary £120 per annum, with board, &c.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.—Junior House Physician. Salary £100 per annum, with board, &c.

NEWCASTLE-UPON-TYNE EDUCATION COMMITTEE.—Assistant School Medical Officer. Salary £300 per annum.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—District Residential Medical Officer for four months. Salary at rate of £60 per annum, with board, &c.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—Temporary Assistant Physician. Also Temporary Assistant Surgeon. Salary £25 per annum to cover travelling expenses. Also Ophthalmic Surgeon for three to six months.

READING, ROYAL BERKSHIRE HOSPITAL.—House Physician for six months. Salary £250 per annum, with board, &c.

ST. BARTHOLOMEW'S HOSPITAL.—Temporary Assistant Administrator of Anæsthetics.

ST. PANCRAS INFIRMARY, London.—Junior Assistant Medical Superintendent of South Infirmary, Pancras-road, N.W., and Junior Assistant Medical Officer of House adjacent. Salary at rate of £200 per annum, with board, &c. Also Locum Tenens. Salary at rate of 7 guineas per week, with usual residential allowances.

SHEFFIELD, JESSOP HOSPITAL FOR WOMEN.—Junior Female House Surgeon, unmarried, for Gynæcological and Maternity Departments. Salary £160 per annum, with board, &c.

SOUTHAMPTON, COUNTY BOROUGH ISOLATION HOSPITAL.—Resident Medical Officer of Health. Salary £300 per annum, with board, &c.

SUNDERLAND, THE ROYAL INFIRMARY CHILDREN'S HOSPITAL.—Female Resident Medical Officer for six months. Salary £100 per annum, with board, &c.

TUNBRIDGE WELLS GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £250 per annum, with board, &c.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Surgeon for six months. Salary at rate of £200 per annum, with board, &c.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—House Surgeon for six months. Salary at rate of £150 per annum, with board, &c.

YORK CITY.—Temporary Tuberculosis Officer. Salary at rate of £500 per annum.

Births, Marriages, and Deaths.

BIRTHS.

BIGGE.—On July 11th, at Vellam House, Southfields, S.W., the wife of A. C. B. Bigge, M.R.C.S., L.R.C.P., of a daughter.

BRUSHFIELD.—On July 10th, at Budleigh, Halifax, the wife of A. N. Brushfield, M.R.C.S., of a son.

FINCH.—On July 16th, at Ladywalk, Rickmansworth, Herts, the wife of Captain G. Finch, R.A.M.C. (T.), of a daughter.

MARRIAGES.

BENT—CHAPMAN.—On July 15th, at St. John's, Bognor, Percy Bent, M.R.C.S., L.R.C.P., of Algrave, Putney, to Wilna, eldest daughter of G. H. Chapman, of Woodborough Lodge, Putney, S.W.

DOWSE—TODD.—On June 24th, at St. Stephen's, Paddington, W., Captain J. C. Dowse, R.A.M.C., to Mab, daughter of B. Hall Todd and of Mrs. Todd, Kingstown.

DEATHS.

BELL.—Accidentally drowned, on July 11th, while on active service abroad, Edward Augustine Bell, M.B., B.S. Lond., Temporary Captain, R.A.M.C., son of Mrs. William Bell and the late William Bell, M.R.C.S., J.P., of New Brighton.

CASTLE.—On July 15th, in London, Charles Wigram Marshall Castle, M.R.C.S., L.R.C.P., P.M.O., Kingston, Jamaica, aged 56 years.

GABBETT.—On July 11th, Lieutenant-Colonel Pulteney Charles Gabbett, I.M.S., aged 47.

LEADAM.—On July 14th, at Inverness-terrace, W., William Ward Leadam, M.D., aged 79 years.

MAW.—On July 10th, from wounds in action on 9th, George Oliver Maw, Captain, R.A.M.C.

OWEN.—On July 10th, at East Hagbourne, near Didcot, C. J. Rayley Owen, M.R.C.S., aged 62.

RIX.—Killed in action on July 5th, John Cecil Rix, Captain, R.A.M.C., attached Yorks Regiment, aged 40.

SEABROOKE.—About July 1st, Captain Alec Seabrooke, R.A.M.C., B.A., M.B., B.C. Cantab., M.R.C.S., L.R.C.P. Lond., aged 31.

SILVA JONES.—On Feb. 16th, at the London Hospital, Frank Silva Jones, M.B., M.R.C.S., formerly of Southend-on-Sea, aged 45.

SMITH.—On July 16th, at a nursing home, Arthur Greatorex Smith, M.B., C.M., aged 52.

WALKER.—On July 19th, at 33, Westgate, Peterborough, Thomas James Walker, J.P., M.D., F.R.C.S., V.D., in his 81st year, after two months' illness. Funeral at St. John's Church, Peterborough, on Monday, the 24th inst. at 2.30 P.M.

WILSON.—On July 12th, died from wounds received the previous day, Walton Ronald Wilson, B.A. Cantab., M.R.C.S., L.R.C.P., Lieutenant, R.A.M.C., M.O., Seaforth Highlanders, aged 25.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

ALLEN, GEORGE, AND UNWIN, London.
Elements of Folk Psychology. By Professor W. Wundt. Translated by Edward Leroy Schaub, Ph.D., Professor of Philosophy, Evanston University, Ill. Price 15s. net.

BALE, JOHN, SONS, AND DANIELSSON, London.
Animal Parasites of Man. By H. B. Fantham, M.A. Cantab., D.Sc. Lond., J. W. W. Stephens, M.D. Cantab., D.P.H., and F. V. Theobald, M.A. Cantab., F.E.S. Price 45s. net.

HARRAP, GEORGES G., AND CO., Portsmouth-street, W.C.
Fighting Dirt: A Hygiene Reader for Upper Standards and Evening Continuation Schools. With Introduction by S. S. F. Fletcher, M.A. Price 1s. 8d.

LEWIS, H. K., London.
Manual of Operative Surgery. By J. F. Binnie, A.M.C.M. Aberd., F.A.C.S. Seventh edition, revised and enlarged. Price 32s. net.
Practitioners' Medical Dictionary. By George M. Gould, A.M., M.D. Third edition, revised and enlarged, by R. F. E. Scott, M.A., B.C.L., M.D. Price 17s. net.
Studies in Blood Pressure, Physiological and Clinical. By George Oliver, M.D. Lond., F.R.C.P. Edited by W. D. Halliburton, M.D., F.R.S. Third edition. Price 7s. 6d. net.
Mentally Defective Child. For School Teachers and Others. By Meredith Young, M.D., D.P.H., D.S.Sc. Price 3s. 6d. net.

LAURIE, T. WERNER, London.
Learning to Fly. By C. Graham-White and Harry Harper. Price 2s. 6d.

LONGMANS, GREEN, AND CO., London, New York, and India.
Notes on the Causation of Cancer. By the Hon. Rollo Russell. With Preface by Dr. Dawtrey Drewitt. Price 3s. 6d. net.
Essentials of Histology. By Sir Edward A. Schäfer, M.D., Sc.D., LL.D., F.R.S. Tenth edition. Price 10s. 6d. net.
Anatomy. By H. Gray, F.R.S. Nineteenth edition. Edited by Robert Howden, M.A., D.Sc., M.B., C.M. Notes on Applied Anatomy revised by A. J. Jex-Blake, M.A., M.D., F.R.C.P., and W. Fedde Fedden, M.B., M.S., F.R.C.S. Price 32s. net.

MARLBOROUGH, E., London.
Italian Grammar and Key (Self Taught Series). By A. C. Pangulli. Price 1s. and 6d. net respectively.

MURRAY, JOHN, London.
The Adventure of Death. By Robert W. MacKenna, M.A., M.D. Price 3s. 6d. net.

ROCKEFELLER INSTITUTE, New York.
Studies from the Rockefeller Institute for Medical Research. Vol. XXII.

Notes, Short Comments, and Answers to Correspondents.

DEADLY NIGHTSHADE.

To the Editor of THE LANCET.

SIR,—As the berries of the Atropa belladonna begin to ripen this month and form a very tempting fruit for children a little later on, the following description of the herb may be useful. "Belladonna has a thick whitish root, which is perennial, and sends forth strong, branched, annual, purple-coloured stems, from three to five feet high. The leaves are of unequal size, entire, oval, pointed, and stand in pairs on short footstalks. The flowers are of a dark or purplish colour, large, pendant, bell-shaped, furrowed, and the limb cut into five segments. The whole plant is covered with fine hairs or down; the flowers appear in June or July, but the berries are not ripe till September, when they acquire a shining black colour." Gerarde (Herbal, 1597), after recounting three cases of poisoning from eating the berries, waxeth wrath and writes: "Banish, therefore, these pernicious plants out of your gardens, and all places neare to your houses, where children, or women with child do resort." The plant was formerly known as "Dwale," which Dr. J. A. H. Murray considers as probably from Scandinavian *dvol* = delay, sleep; and gives illustrative quotations from *Cursor Mundi*, Chaucer ("Reeve's Tale"), Piers Plowman, and others. The most interesting notice of dwale, both from a historical and therapeutic point of view, is that of Thomas Lupton (1585), "Dwale makes one to sleep while he is cut or burnt by cauterising." I am, Sir, yours faithfully,

Dublin, July 15th, 1916. GEORGE FOY.

J. H. J. and Others.—Benedict's reagent (S. R. Benedict, Journ. of the Amer. Med. Assoc., 1911, lvii., 1193) consists of 173 grammes sod. or pot. citrate, with 200 grammes crystallised sod. carbonate dissolved in 800 c.c. of boiling water. After cooling and filtering, 17·3 grammes of copper sulphate dissolved in 100 c.c. of water are added, and the whole made up to 1000 c.c. The test for glucose is made as follows: 10 drops of the solution to be tested are added to 5 c.c. of the reagent in a test-tube, boiled for 1–2 minutes, and allowed to cool. If glucose is present the solution will be filled with a red, yellow, or green precipitate.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND, 11, Chandos-street, Cavendish-square, W.

THURSDAY.—2.45 P.M., Annual General Meeting. Papers:—Sir George Savage, M.D.: Mental Disabilities for War Service.—Captain C. McDowall, R.A.M.C.: Functional Gastric Disturbance in the Soldier.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham); Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

The following magazines, journals, &c., have been received:—Journal of Nervous and Mental Diseases, Midland Medical Journal, Parasitology, Public Health, Archives of Pediatrics, Journal of the Royal Naval Medical Service, Guy's Hospital Gazette, Annaes Paulistas de Medicina e Chirurgia, Symons's Meteorological Magazine, Canadian Journal of Medicine and Surgery, Journal of Comparative Pathology and Therapeutics, British Dental Journal, Bulletin of the Office International d'Hygiène Publique, Hospital Gazette, Canadian Practitioner and Review.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX AND TITLE-PAGE TO THE LANCET. January to June, 1916.

IN view of the Government restrictions upon the supply of paper, and the shortage of paper quite apart from these restrictions, the Index and the Title-page to the volume of THE LANCET which was completed with the issue of June 24th have been printed separately, and copies have been supplied gratis to those subscribers who have, up to July 20th, intimated to us their wish to receive them. Other subscribers will be similarly supplied, so long as the stock remains unexhausted, on application to the Manager, THE LANCET Office, 423, Strand, London, W.C. Such application should please be sent in at once.

Volumes and Cases.

VOLUMES for the first half of the year 1916 will be ready shortly. Bound in cloth, gilt lettered, price 16*s.*, carriage extra.

Cases for binding the half-year's numbers are now ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 4*d.*

To be obtained on application to the Manager, accompanied by remittance.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

Subscribers abroad are particularly requested to note the rates of subscriptions given on page 4.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the rates shown, whatever be the weight of any of the copies so supplied.

NEWSPAPERS FOR NEUTRAL COUNTRIES.

Newspapers are not at present being sent forward to neutral European countries unless posted direct from the office of publishers or newsagents who have obtained permission from the War Office for this purpose. The Publisher of THE LANCET has obtained the required permission, and he will forward copies direct from the Office to any neutral country on receipt of instructions.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, July 19th, 1916.

Date.	Barometer reduced to Sea Level and 32° F	Direction of Wind.	Rainfall.	Solar Radiation Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
July 13	29·800	S.W.	0·03	82	65	53	58	60	Overcast
,, 14	29·934	N.W.	0·26	115	65	54	54	56	Overcast
,, 15	30·150	N.W.	...	96	63	51	53	58	Cloudy
,, 16	30·120	S.W.	...	84	66	55	59	59	Raining
,, 17	30·036	N.W.	0·18	80	66	57	59	59	Overcast
,, 18	30·106	N.E.	0·08	117	68	54	54	55	Overcast
,, 19	30·096	N.E.	...	123	72	55	55	61	Fine

Communications, Letters, &c., have been received from—

A.—Mr. J. Vere Arkle, France; Anglo-French Drug Co., Lond.; Messrs. Arnold and Sons, Lond.; Messrs. Adlard and Son, and West Newman, Lond.; Captain C. H. Attenborough, R.A.M.C., France; Mr. N. Almond, Kingston-on-Thames; Dr. S. K. Alcock, Stoke-on-Trent; Messrs. R. Anderson and Co., Lond; Anglo-American Pharmaceutical Co., Croydon; Admiralty, Medical Department, Director-General of; Association of Registered Medical Women, Lond., Secretary of.

B.—Mr. W. R. Bristow, Lond.; Dr. Helen Barnes, Chippenham; Dr. J. Brennan, Mountshannon; Messrs. Burroughs, Wellcome, and Co., Lond.; Messrs. John Bale, Sons, and Danielsson, Lond.; Messrs. Butterworth and Co., Lond.; Birmingham University, Secretary of; Brighton County Borough, Clerk to the; Messrs. W. H. Bailey and Son, Lond.; Dr. F. A. Brooks, Brighton; Dr. N. S. Bonard, Lond.; Bristol Royal Infirmary, Secretary of; Mr. William Barnes, Yeovil; British and Foreign Sailors' Society, Secretary of; Board of Agriculture and Fisheries, Lond.

C.—Dr. J. F. Corson, Colinton; Messrs. E. Cook and Co., Lond.; Crookes' Collosols, Lond.; Captain J. R. Cooke, R.A.M.C.; Colonel J. Cantlie, R.A.M.C., Lond.; Consulting Patent Agency; Mr. E. M. Corner, Lond.; Messrs. Carnrick and Co., Lond.

D.—Mrs. A. E. Dawes, Feckenham; Messrs. Duncan, Flockhart, and Co., Edinburgh; Dr. G. H. Dart, Lond.; Messrs. Dale, Reynolds, and Co., Lond.; Devonshire Hospital, Buxton, Secretary of; Denver Chemical Co., Lond.; Dr. Vincent Dickinson, Lond.; Professor S. Delépine, Manchester; David Lewis Northern Hospital, Liverpool, Secretary of.

E.—Dr. W. A. Evelyn, York; Dr. G. N. Edmondson, Milnthorpe; E. W. H.; Egypt, Department of Public Health, Director-General of, Cairo.

F.—Mr. J. F. Frazer, Lond.; Dr. H. Morley Fletcher, Lond.; Captain T. Fenwick, R.A.M.C., France; Dr. A. O. M. Fehrsen, Potgieters Rust; Hon. Mrs. Franklin, Lond.; Messrs. Fletcher, Fletcher, and Co., Lond.

G.—Glasgow University, Registrar of; Messrs. R. D. Galbraith and Co., Lond.; Dr. S. N. Galbraith, Newark-on-Trent; Messrs. Gordon and Goteh, Lond.; Grant Medical College, Bombay, Principal of; Mr. Kenneth Goadby, Lond.; Mr. H. Bellamy Gardner, Lond.; Mr. J. Galt, Cottingham; Captain E. Glynn, R.A.M.C.; General Medical Council, Lond., Acting Registrar of.

H.—Dr. A. B. Howitt, Lond.; Huddersfield Corporation, Clerk to the; Hertfordshire County Asylum, St. Albans; Dr. Jamieson B. Hurry, Reading; Dr. E. B. Hazleton, Sheffield; Dr. Francis Hare, Lond.; Dr. A. C. Houston, Lond.

I.—Indiana Public Library, South Bend, Librarian to the.

J.—Johns Hopkins Press, Baltimore; Messrs. W. Judd, Lond.; Jeyes Sanitary Compounds Co., Lond., Secretary of; Mr. H. Langley Jones, Westcliff on Sea; Jessop Hospital for Women, Sheffield, Secretary of.

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